THE TECHNOLOGY REVIEW

NOVEMBER 1929

technology
review
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What makes it tick?

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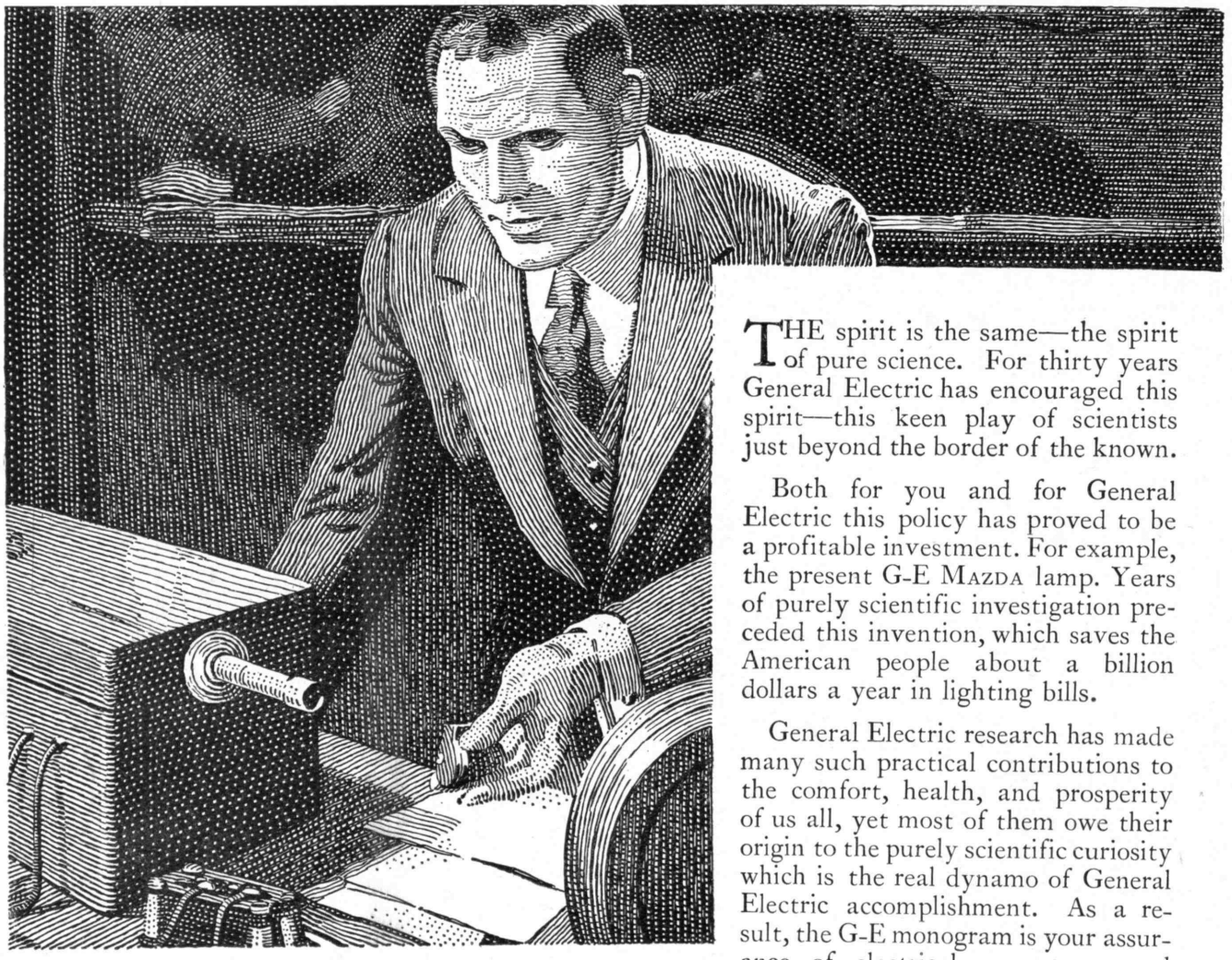

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THE TABULAR VIEW

STUART CHASE, '10, author of the first article in this issue, has established himself as an astute observer and critic of the modern economic scene. Shortly after marriage, he and his wife undertook by working as laborers to get the laborer's point of view, and they incorporated their observations in "A Honeymoon Experiment" published in 1916. Until 1917 he continued as a partner in the Boston firm of Harvey S. Chase ('83) Company, certified public accountants; but in that year he started for the Federal Trade Commission an investigation of the meat industry and the packers. When this was concluded in 1922, he joined the staff of the Labor Bureau, Inc., doing further research. In 1925 he published "The Tragedy of Waste," in 1927 "Your Money's Worth," and in 1929 "Men and Machines." His article "A Billion Wild Horses" treats of the same topic as his last book. ¶ GEORGE C. WALES, '89, is familiar to Review readers because of his etchings and lithographs that have been reproduced on various covers. For the first time he presents an article on his work as a marine artist. When, like many architects, he turned to etching as a hobby, it developed until it became his vocation; and architecture lost an able man, but the confraternity of American etchers gained a growingly important artist. From boyhood the love of the sea, its moods, and its ships has been his major interest and it is this love that he has put on copper. More than to portray ships his ambition is to have them historically correct, a much more difficult task!

FREDERICK H. NEWELL, '85, left the Institute equipped with the knowledge gained from the Course in Mining Engineering and Metallurgy, to go into various forms of engineering and mining experience with the United States Geological Survey and ultimately to become Director of the United States Reclamation Service. His present activities are many, for he is a member of the United States Land Commission, the United States Inland Waterways Commission, the National Board for Fuels and Structures and the Water Power Survey of the State of Pennsylvania. He has been awarded the Cullum Gold Medal by the American Geological Society, and has written several books and many papers, chiefly on irrigation problems. In 1919 he was elected President of The Research Service, Inc., at Washington, D. C., and it is in connection with this position that he has carried on his study of the Boulder Dam situation about which he writes for this issue. ¶ WILLIAM HOVGAARD, Professor of Naval Architecture at the Institute, began his naval training in Denmark, where he was graduated from the Naval Academy in 1879 and the Royal Naval College in England in 1886. After serving in the Danish Navy, he had various duties in the ship yard at Copenhagen where he was general manager. He came to the Institute in 1901 and has carried his professorship along with such outside interests as consultant for the Bureau of Construction and Repair of the Navy Department. Although he was naturalized in 1919 his own government recently recog-

(*Concluded on page 6*)

THE TABULAR VIEW

(Concluded from page 5)

nized his services by making him a Knight of the Order of Dannebrog. His books on ship design and his work with the Navy Department excellently equip him with sufficient data for his constructive criticism of the naval armament reduction problem. ¶ DR. JAMES A. TOBEY, '15, is the holder of several degrees conferred upon him for his work in public health. During the war he was a Major in the Sanitary Reserve of the Army. In 1922 he was admitted to the Bar of Washington, D. C., and with this legal training and his public health work he became scientific consultant for the Borden Company in New York. At various times he has lectured at the Institute, the Yale School of Medicine, the Harvard School of Public Health, and Columbia. Many articles and books have been the result of his studies.

L. MAGRUDER PASSANO entered the Mathematics Department at the Institute as an instructor in 1892. Since 1913 he has been an Associate Professor. His review of Stuart Chase's book, "Men and Machines," is an impersonal summary of the merits of the book and contains pertinent comments on the industrial situation. ¶ TENNEY L. DAVIS, '13, received the degrees of A.M. and Ph.D. from Harvard after he left the Institute. In 1919 he became an instructor at the Institute in the Department of Chemistry, and is now Associate Professor in that Department. Professor Davis has long been keenly interested in research in the history of his subject and has collected an unusual library. Allied with this interest is his appointment in 1927 as Secretary for the Division of History of Chemistry of the American Chemical Society. ¶ C. HALE SUTHERLAND, '10, came to the Institute after receiving degrees from the Institute and Harvard as Assistant in the Department of Civil Engineering in 1909. He spent the year 1926 to 1927 on leave of absence as a member of the Faculty of Robert College, located at Constantinople near the Women's College of which he writes. Since 1925 he has been Associate Professor of Structural Engineering.

THE Review, long interested in the Graphic Arts and the beauty which may be conveyed by them, starts with this issue a series of water color reproductions in full color on its covers. The subjects in the main were obtained from an exhibition of water colors in the Institute's Department of Architecture, and to the Head of that Department, Professor William Emerson, The Review is much indebted. The water colorist whose "Jupiter Temple" is reproduced in this issue is Professor Jacques Carlu, in the winter *Maestro* for the Institute's architectural design courses, in the summer Director of the Fontainebleau School of Fine Arts, and in 1919 recipient of the *Prix de Rome*. His imaginative water color of the temple of Jupiter Capitolinus grew out of Professor Carlu's *Prix de Rome* studies for the re-creation of the Capitoline Hill in old Rome. When, in 1926, he exhibited his work in Boston it evoked nation-wide comment.

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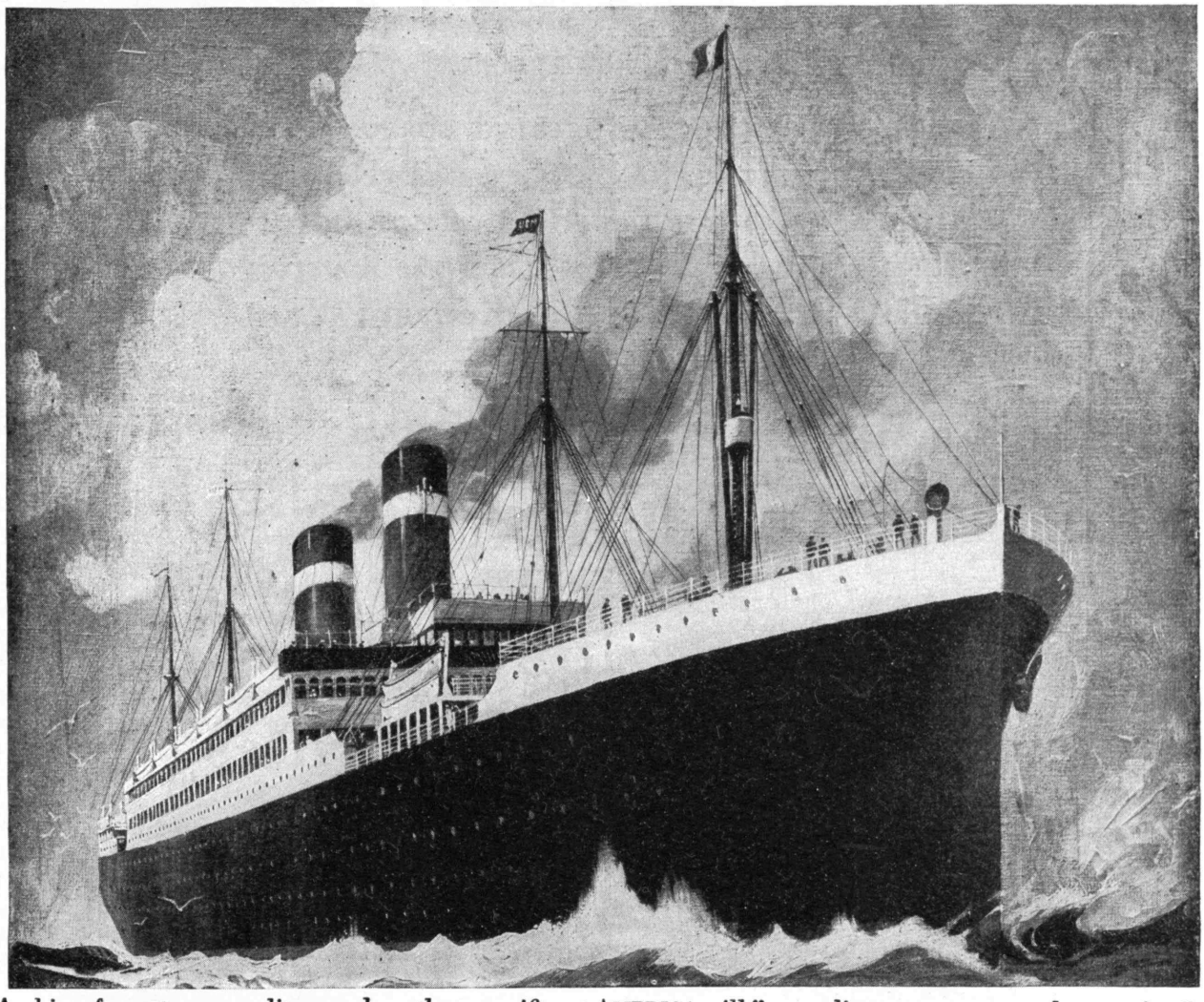

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The TECHNOLOGY REVIEW

VOLUME 32 · NOVEMBER, 1929 · NUMBER 1

A BILLION WILD HORSES

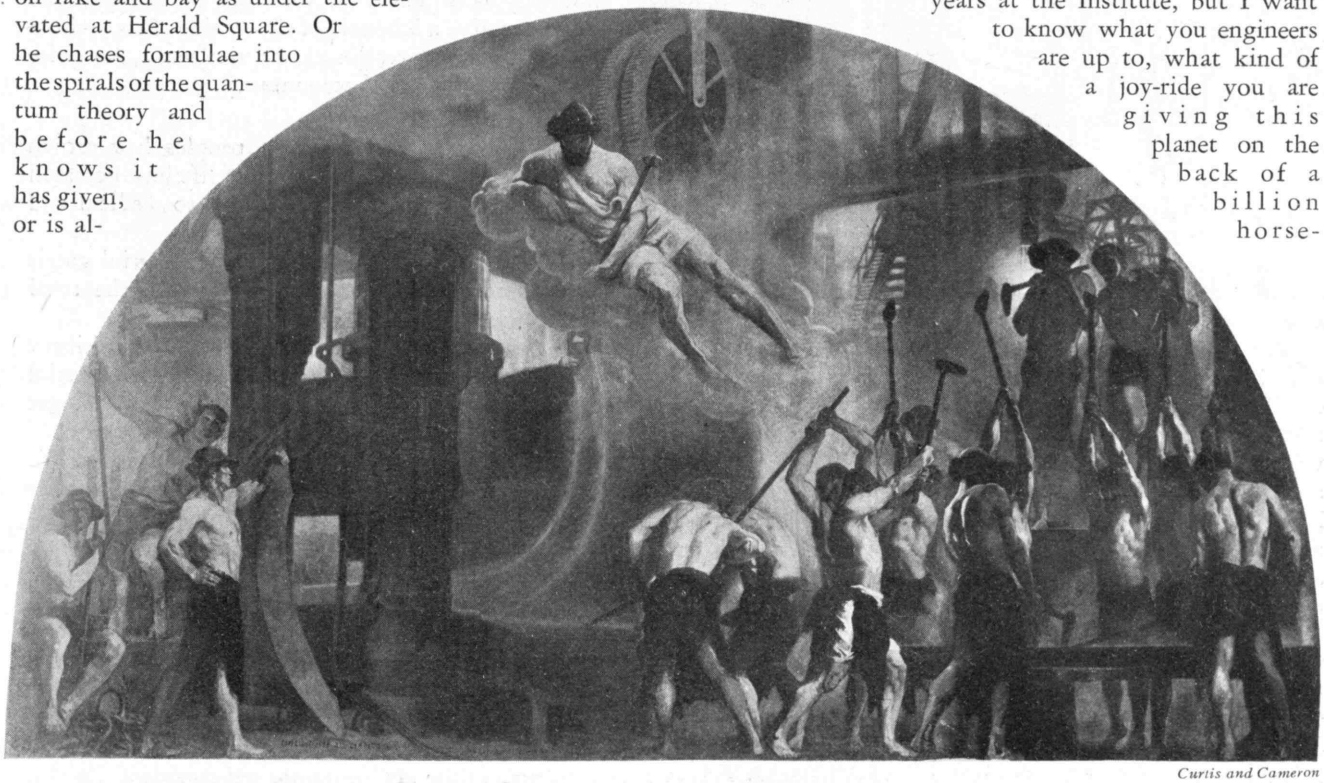
Are Machines More Harmful than Helpful?

BY STUART CHASE

THE modern man of science, and particularly the engineer, is normally so engrossed in his specialized line of research, or in his particular job, that he has little time to step aside from his activity, and ask what his work is doing to the world. He perfects, let us say, a teletypesetter whereby the labor of some thousands of linotype operators is saved. The newspapers run congratulatory editorials, banquets are held, honors bestowed. But what about the linotypers tramping the streets? Or he invents a poison gas against which no mask furnishes protection. His government welcomes him with open arms. But what about some millions of non-combatants in the next great war? Or he develops a mechanically beautiful outboard motor, and lo! day and night become as hideous on lake and bay as under the elevated at Herald Square. Or he chases formulae into the spirals of the quantum theory and before he knows it has given, or is alleged to have given, religion another sock on the nose.

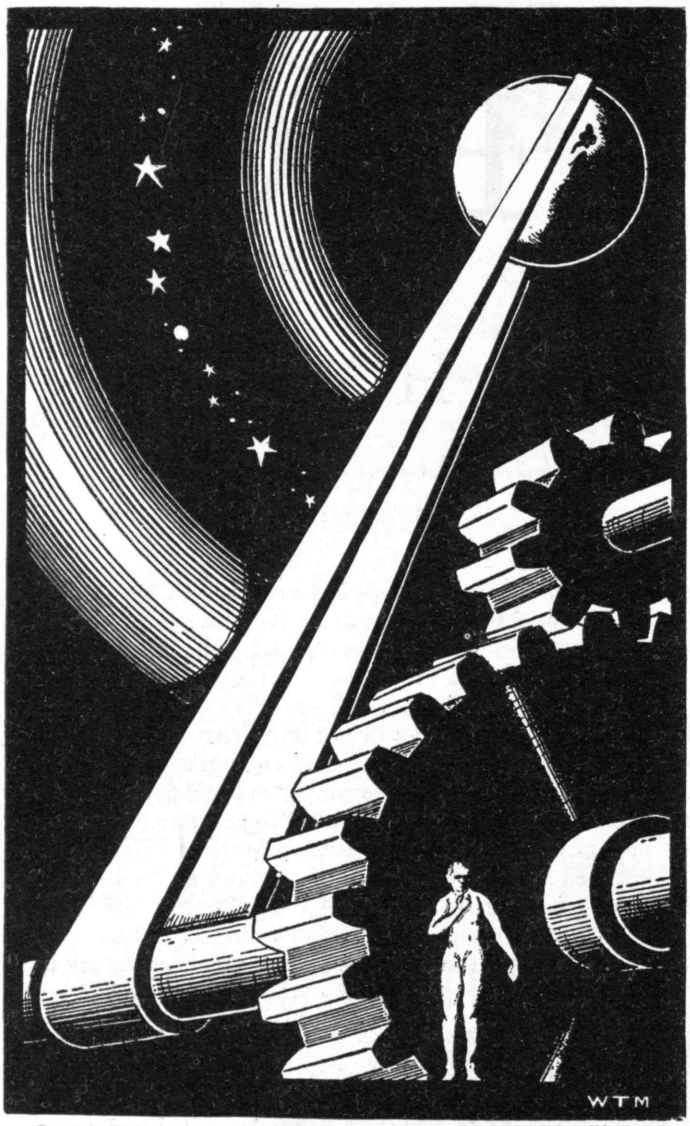
It is doubtless presumptuous for a layman to rush in where the priests of science themselves have seldom trod, but some laymen are cursed with a philosophical curiosity, and I happen to belong to that racked and driven group. We want to know not only what science is doing to things, but what it is doing to human behavior patterns and to social relationships; and what it proposes to do to them in the future. We try to get together not only the physical fact, but the reaction of that fact on the lives of men and women — a foolhardy and perhaps hopeless quest, but we are born with a tropism towards it, as a moth is born with a tropism towards the light.

In brief, gentlemen, I am no engineer, despite my two years at the Institute, but I want to know what you engineers are up to, what kind of a joy-ride you are giving this planet on the back of a billion horse-



Curtis and Cameron

THE SPIRIT OF VULCAN, BY EDWIN A. ABBEY (IN PENNSYLVANIA STATE CAPITOL)



Drawn by W. T. Murch for "Men and Machines", by Stuart Chase. The Macmillan Company

power, and whether the world is really a better place to live in since you started the laboratory racket along about the time James Watt took a walk on Glasgow Green and smiled because the answer to the problem of a vacuum in a steam chamber had come to him.

We live in the Power Age, or perhaps better, following Fred Tryon, the Age of Energy. We have all sorts of dandy little jiggers which we never had before. We have tortured time and contracted space with unheard-of velocities. Many of us live at a speed which comes reasonably close to the limit of biological tolerance. Are we any happier? Are we getting any more out of life than, say, a pupil of the Academy in Athens, a Ptah Hotep in the reign of the Pharaohs? Before such questions can be even approached, let alone answered, the philosophical layman must prepare the ground for his own understanding with a preliminary battery — something along this line!

What is a machine? How does it differ from a tool; what are its laws? How many machines are there; how often do we encounter them, directly and indirectly? Is this contact growing, and in what direction? How did the Machine Age start; why did it start? What does mass production really mean? Is anybody controlling the process, or is it running wild in an orbit of its own? Is it really making a new slave in the factory worker; and if so, is he a lowlier being than the galley slave of Greece? Are machines raising the percentage of invalids and neurotics? What are they actually doing to craftsmanship, skill, quality of output, art, architecture, and recreation? Is social intelligence on the decline? Is social standardization a fact, and if so, is it any worse than the standard taboos and *mores* of other cultures, and of primitive peoples? Is it more depressing to be a Babbitt or a member of an East Indian caste? How much justice is there in the claim that the sublime spiritual values of the East are crucified by the materialism of the West? Is the use of the hand actually declining, and if so, what of it? What is the limit, if any, to biological adaptation to the machine?

Obviously, I cannot hope to compress in this article what it has taken me two thousand pages of documentary notes, and a whole book to write. Some of these questions I have, I believe, answered flatly; some partially, some not at all — the supporting data never having been accumulated. I have tried to follow the trail of the billion horses with some diligence, but they are a wild, ornery lot. It will take a better man, yes, a whole seminar of better men, comprehensively to chronicle their marchings and counter-marchings. A tentative balance sheet may, however, be struck in the following terms, even if space does not allow of the concrete evidence (it lies in the two thousand pages of notes) that supports it. In this balance sheet I have tried to enumerate the positive gains and the positive losses, humanly considered, of the Age of Energy, and finally to give a schedule of observable effects whose excess of gains over losses, or vice versa, lie quite beyond my powers of accountancy.

Effects manifestly good:

1. The life-span of modern peoples has grown longer. The average expectancy of life has increased a third in the past two generations due to medical and mechanical controls.

2. Higher living standards in terms of material goods have been secured for a larger percentage of the total population than has ever before been obtained.

3. The shrinkage of space brought about by machinery is demonstrating more forcibly every day the essential social and economic unity of the world. (While the logic is inevitable, the acceptance thereof is still remote.)

4. Hours of labor have decreased in recent years. We still work harder and longer than have many former societies with a hundred holidays or more a year (Germany in 1400, for instance), but if the machine were encouraged to function as a true labor-saving device, we could undoubtedly do better in this respect.

5. Superstition is declining. The wayfaring man is somewhat readier to ask: "What makes this thing act the way it does?" rather than fall on his face before unknowable mysteries.

6. Certain machines, particularly the automobile, have tended to expand the ego, promote self-confidence, and a sense of power in persons and classes.

7. The mechanical operation of industry is beginning to introduce a "philosophy of fatigue" whereby elaborate tests determine just how long a given individual can work without fatigue poisons damaging his output. Done with an eye to profit, this still remains one of the most merciful roads which the race has ever taken. The process is still in its infancy.

8. Cruelty as a social phenomenon has undoubtedly decreased in the last century. Who used to weep for famine sufferers in China? Now the cable and the camera bid us weep in strict order, reaching for a check book the while. A citizen of Rome, one suspects, would have regarded the Red Cross as so much moonshine.

Effects manifestly evil:

1. The menace of mechanized warfare grows daily more ominous — particularly in respect to the airplane, capable of the three-dimensional attack.

2. The tenuousness of connection and balance in the interlocked industrial structure also grows. Any crisis — such as a strike of key technicians — may seriously upset the whole social equilibrium. There is also an alarming shrinkage in the average man's understanding of the technology which shelters, clothes, and feeds him.

3. National resources are being exploited with prodigious waste, and little care for the future.

4. The factor of monotony and wearisome repetition in mechanical work, while it does not apply to more than four per cent of the population in America, is an ever-present evil.

5. Specialized tasks are sundering the ancient trinity of work, play, and art, and thus tending to upset an admirable, and perhaps biologically necessary human equation. Meanwhile commercialized and mechanized recreation with its second-hand rather than first-hand participation, is tending further to upset the equation.

6. Specialization has enormously promoted the importance of money, making it the *sine qua non* of modern life. This leads to a serious confusion of values, in that the symbol displaces the underlying reality.

7. Workmen, clerks, even executives, are displaced by machinery faster than they can be absorbed in other occupations.

8. The existence of more machines than purchasing power to absorb their output has led to the foolish and very costly antics of high pressure salesmanship.

9. It is claimed that the ratio of mental diseases to the whole population is increasing. I find no satisfactory proof of this claim, but if true, it registers a fundamental count against the strains and stresses of modern life.

10. The increased speed and use of the mechanical process has made for a higher accident rate in the United States since 1920. (According to the American Safety Council.)

11. At the present time industry is clearly overvalued at the expense of agriculture. These two great activities are fundamentally out of balance.

12. Mechanization has led to cities so congested that it gives little pleasure to live in them, or to contemplate what will happen if the pressure becomes much greater. By and large the subway is an engine for "pumping us back and forth from places where we would rather not live, to places where we would rather not work."

13. Machines have engendered a volume and variety of noise hitherto unknown; while dust and smoke constitute two additional evils of the Power Age.

14. The impact of the machine on nature peoples has normally been an unrelieved story of progressive degeneration. Firearms, factory rum, and ready-made pants — with their concomitants — have corrupted every littoral upon which they have landed.

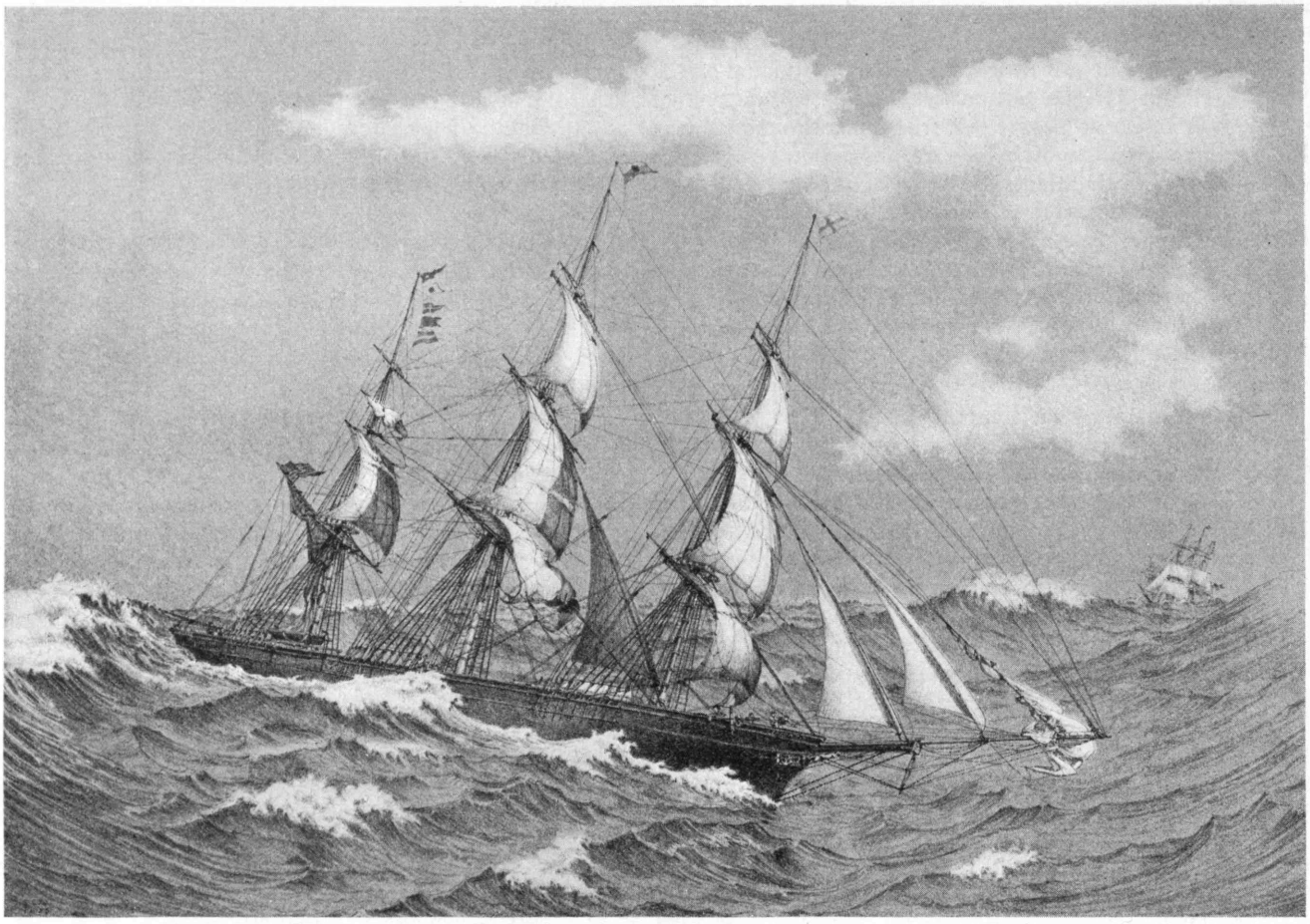
Effects both good and evil:

1. The world's population has doubled in the last hundred years, due more to the machine than any other factor. This pleases militarists more than it does philosophers.

2. The machine has brought the independent, self-supporting community to an end. This makes for greater productive efficiency when everything is going well — and for greater helplessness when everything is going ill.

3. Machines uproot old skills, but create many new ones. Occupations like that of the locomotive engineer, the hook and ladder man, the (*Continued on page 42*)

Drawn by W. T. Murch for "Men and Machines," by Stuart Chase. The Macmillan Company



LITHOGRAPH: CLIPPER SHIP "STAGHOUND" OF BOSTON (1851)

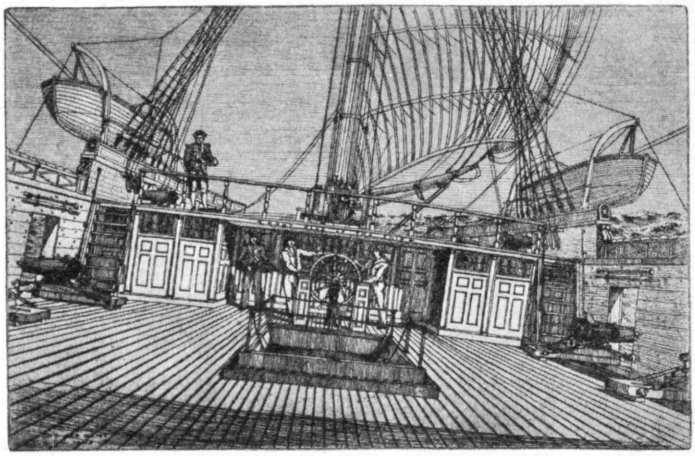
HALYARDS AND

A Well-Known Artist Writes of His

By George

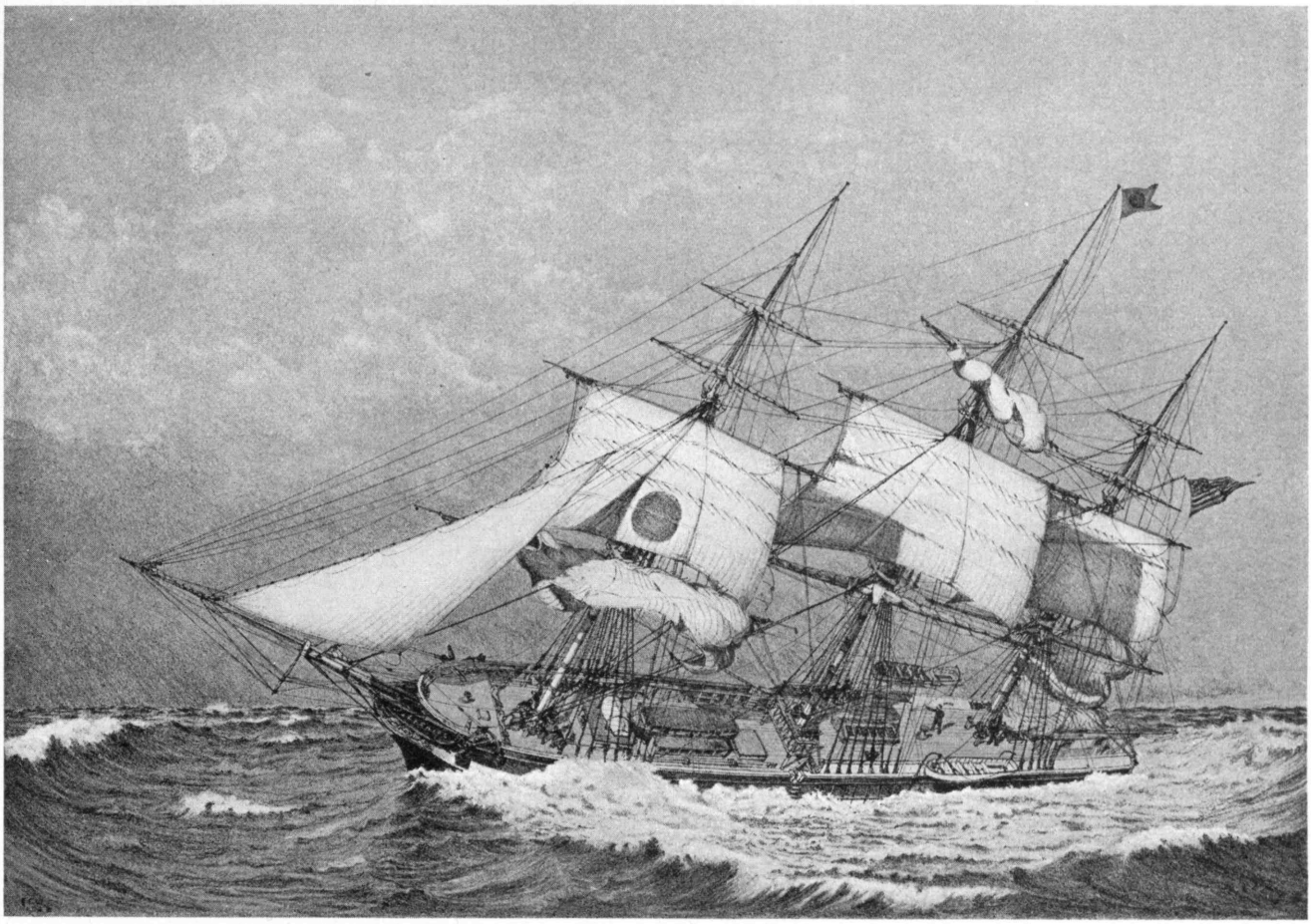
Illustrated from Etchings and

INTEREST in the sea and in ships is hereditary with the New Englander. His forbears were of seafaring stock, and early in the history of the colony they turned to the ocean for larger harvests than the soil could give them. Ship yards were established where tidewater and ship timber were available together, and the fisheries and commerce became the main foundations of our wealth. The War of the Revolution and the War of 1812 interrupted the course of trade, but our shipowners, with the material and personnel at their command, turned to privateering, and in many cases served their country ably, and with great profit. The period of peace following the latter war saw a great expansion in maritime affairs, and the development of a foreign trade that took our ships to all parts of the world. Boston ships traded for furs with the Indians of the Northwest Coast, exchanged those for silks and teas in China and proceeded home around the world to a final market. Salem grew in her trade with the East, and found in pepper a gold mine, and Nantucket and New Bedford whalemen, seeking sperm, made and charted discoveries throughout the Seven Seas. Coasting vessels, fishermen, and perhaps a brig or two trading to the West Indies hailed from many a small harbor of our coast.



ETCHING: "OAK AND HEMP." STUDY OF QUARTERDECK AND POOP OF A SHIP-OF-THE-LINE

A natural improvement in model and rig of ships had accompanied the growth of commerce, but it remained for the discovery of gold in California to



LITHOGRAPH: BLACK BALL PACKET SHIP "YORKSHIRE" (1856)

REEF-TACKLES

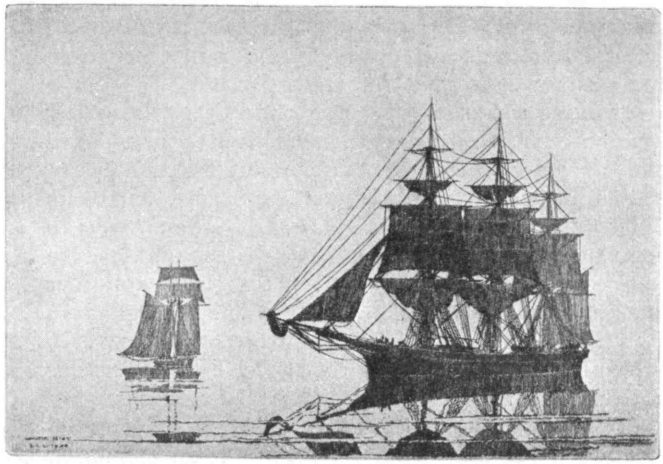
Etchings and Lithographs of the Sea

C. WALES

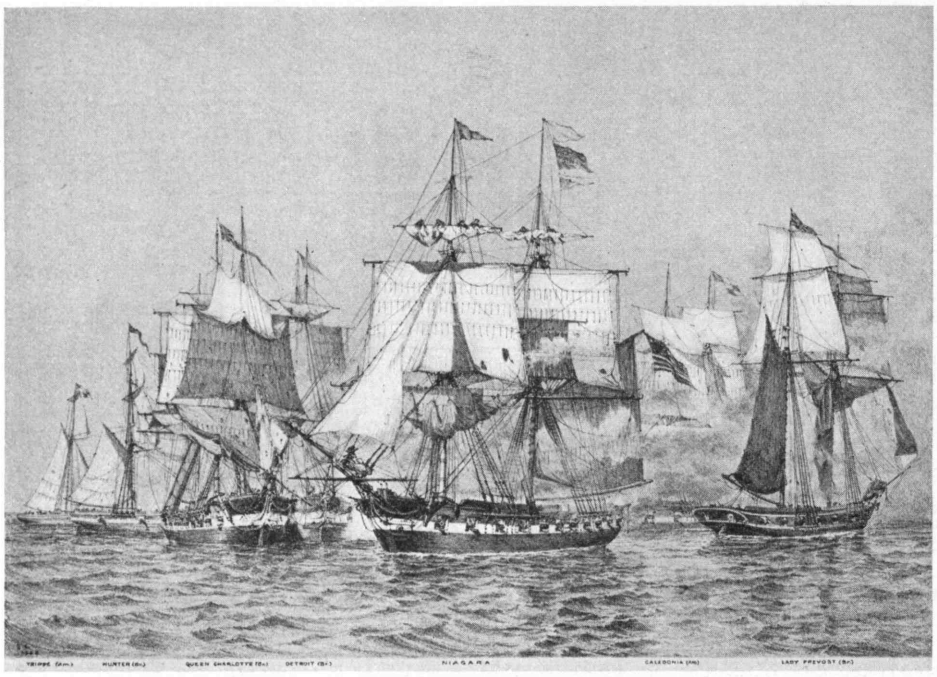
Lithographs by the Author

exert the influence that brought marine design to its highest point of speed and beauty in the Clipper Ship. A large population was suddenly planted in a distant land where all its needs must be supplied from home and, in much the greatest part, via Cape Horn. Freights rose to unprecedented heights with a premium on quick delivery and, following the lead of such builders as Donald McKay and Samuel Hall of Boston, and Jacob Westervelt and William H. Webb of New York, clipper ships were laid down in every yard of importance. This period was followed by a decline, and the Civil War ended it, partly by forcing the sale of many ships, and partly by actual destruction. After the war capital turned to railroads and the development of the West; steam became the leading factor in ocean transportation, and the day of the sailing ship was nearing its close. Very few large sailing ships survived the World War, and a square-rigger is today a rare sight.

So, for a number of these later years interest in the old ships was confined among comparatively few people. The number of surviving shipmasters grew less, the old sailor (whose way of life was not always conducive to longevity) had passed on, and few members of a younger generation had a chance of seeing a square-rigger under sail. But there were always some in whom love for ships and the sea endured. It might be that they were descendants of the merchants, or the builders, or the masters, and had inherited a few paintings of vessels, — it might be a



ETCHING: "MORNING MIST." TYPICAL CLIPPER SHIP AND TOPSAIL SCHOONER IN CALM AND MIST



LITHOGRAPH: U. S. BRIG "NIAGARA," LAKE ERIE (1813)

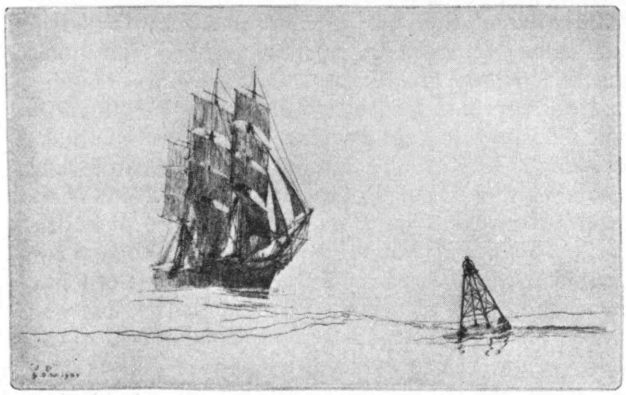
love of the water and yachting, or it might be the fascination of reading that impelled them. However, these few gradually accumulated collections, paintings, prints, models, and so on, — a modest group of folks who in no way assumed the status of the antique collector.

In 1910 Captain Arthur Clark brought out his "Clipper Ship Era" which, somewhat surprisingly to the ordinary ship-minded person, proved to be a "best seller." From then on, a reawakened interest in ships has grown until a ship print that might be had for ten or fifteen dollars in earlier days has frequently brought from $350 to $400 in the auctions of today. Nor do I believe that this is all the effect of a passing fad. The ships themselves have gone, and as is not unusual in any case of a departure or a loss to us, we realize after the event how much they meant to us. They were adventure, romance, wealth, sea power, history: they were heroic, they were criminal, and they were beautiful. Ships helped us to achieve our independence, and without ships our War of 1812 would have been disastrous to us. In short, ships have been an important factor all through the young manhood of the nation, and we have discovered that fact.

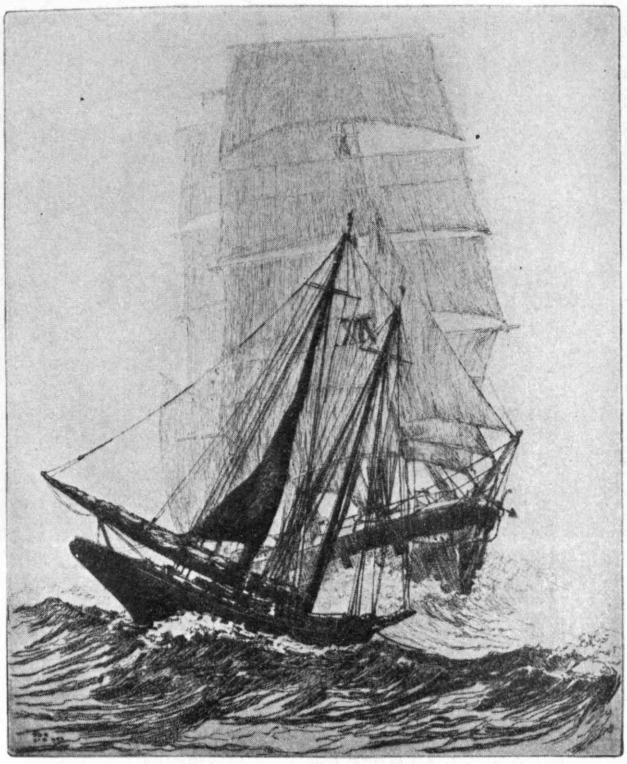
It follows then that we are curious to know how they were built, how rigged and handled, what they looked like under all plain sail or shortened down for a blow, or cleared for action with preventer braces rove, and chain slings on the yards. And the search for the answers to these and a thousand other questions is one that leads to many interesting happenings, satisfactory solutions sometimes, and sometimes a puzzle where "no feller can tell" how they did this or that. This study and research is by no means confined to the model builder and the marine artist, but has extended widely. I note a proof of the fact in that I am asked frequently as to what authority I have for something appearing in an etching or lithograph. A question like this twenty years ago would have come only from a sailor; the marine artist's "public" had neither the knowledge nor the interest to make such a query. But that condition has changed, and today it will not suffice to make a pretty sketch and label it *Flying Cloud* or *Constitution*, to be assured of success. Far from it, there are too many people whose marine knowledge equals that of the artist, and furthermore, these are the ones whose criticism or commendation is most valued by him. How is he to satisfy them?

The general answer is by research and study, and we find as we progress that the field widens before us and that familiarity with one or two periods and a speaking acquaintance with the others will be enough to keep us fairly busy for some time. In my own case I find that our own ships from the time of the Revolution to the Civil War give me plenty of subjects, plenty of variety, and plenty of work to gather their data.

This data comes mostly from books, prints, paintings, and models, contemporary if possible, although in recent years there have been produced both books and models based on the most careful research, that are entirely worthy of confidence. The old books on rigging and seamanship are indeed "The Young Sea Officer's (let us say Artist's) Sheet Anchor," to paraphrase the title of Darcy Lever's book, published in 1808. Lever gives us information as to both naval and merchant practice, and is a good reference for our 1812 frigates. Although published in England, it was reprinted here, and the converse was true of Dana's "Seaman's Friend," printed in Boston in 1841 and running through many editions both here and in England where it appeared as the "Seaman's Manual." Falconer's "Marine Dictionary," late in the Eighteenth Century, is more or less contemporary with



DRYPOINT: "J. D." SHIP COMING OUT OF FOG TO BELL BUOY. (J. D. IN INTERNATIONAL CODE MEANS "YOU ARE STANDING INTO DANGER.")



DRYPOINT: "FOG." AN INCIDENT — FISHERMAN ANCHORED ON THE BANKS ALMOST RUN DOWN BY MODERN STEEL CLIPPER

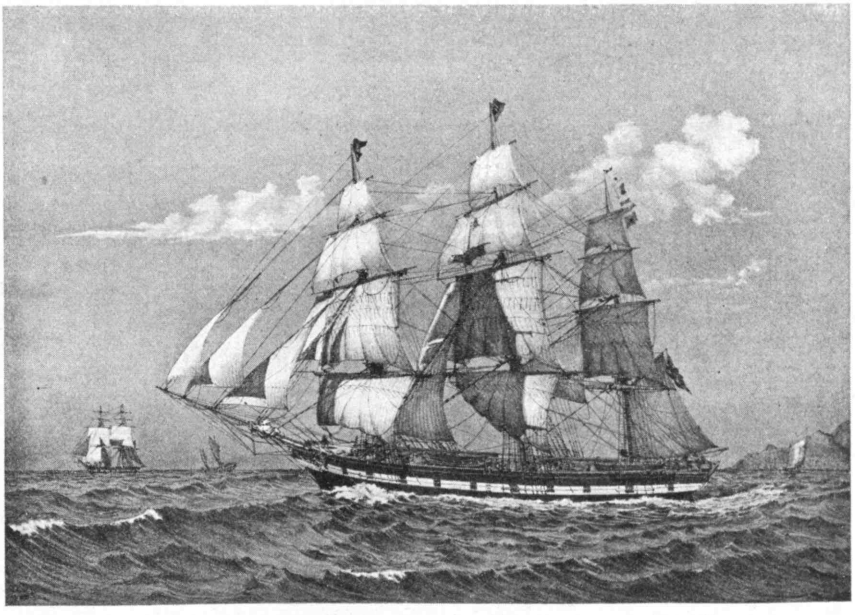
our Revolution, and Biddlecombe's "Art of Rigging," Brady's "Kedge Anchor," the manuals of Luce, Nares, and Totten between them cover pretty much all the ground up to the Civil War, and give us the basic knowledge of rig as well as its variations in the two services, and for various periods. For historical events we must depend on naval histories and related documents.

Paintings of individual ships provide the facts we need for a portrait, as well as additional data on rig. As might be expected in the youth of the nation, there are few of these of the Revolutionary period. Following that war the shipping of Salem began to be well represented in the watercolors of Anton Roux of Marseilles and other painters, both abroad and at home, and Boston and New York ship owners followed the example of Salem. Oil paintings of the actions of the War of 1812 by Thomas Birch show our frigates and sloops, and the merchant service a little later is well represented by Salmon, Walters, and others. Chinese artists as well as American and English have left us portraits of the clippers. Paintings in general we can accept as accurate, most of the painters were men of knowledge and skill, and we may be sure that the owner or skipper would not be satisfied with a slip-shod representation of rigging leads.

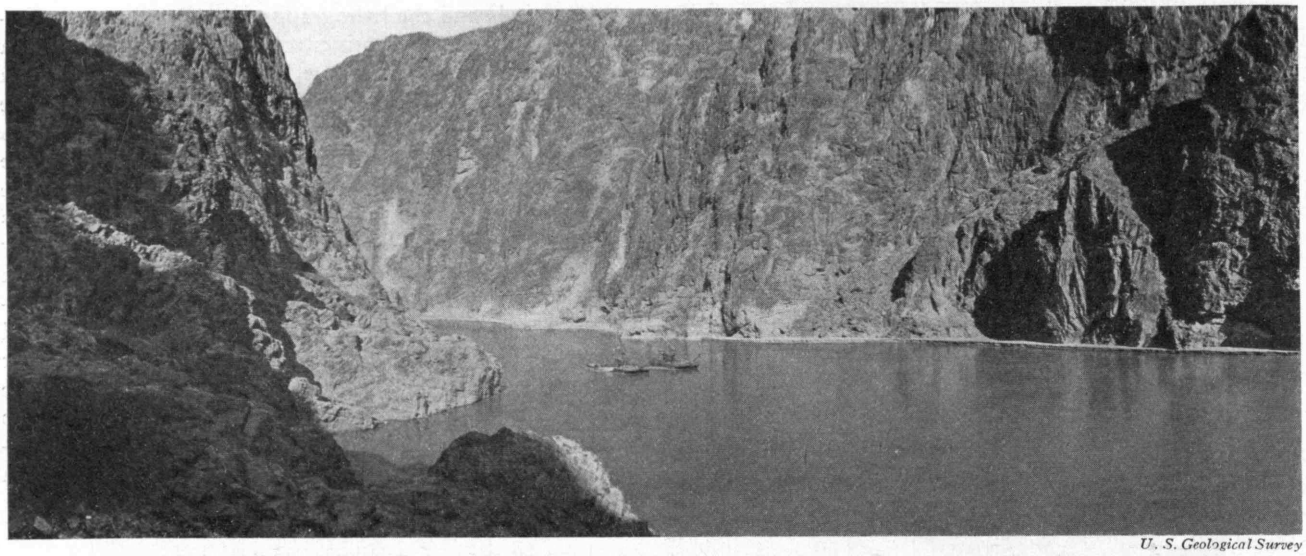
Of prints we have a few early American engravings, some English prints, mostly aquatints (about the 1812 period) and the lithographs from Pendleton to Currier. Most of our own prints are rather crude in art and a bit elementary in detail, but I believe that many (I am thinking especially of the Currier folio clippers) are accurate portraits as far as they go.

Models may be of the greatest help, or they may be absolutely misleading. Of the early period some of the bone models are among the best. Sailor-made models they are, but of the days when the sailor knew not only the spars and rigging, but was accustomed to do his own dock-yard work and knew what was below the waterline. In later days this work was delegated to others, and many of the later sailor models, while correct on deck and aloft, show an ignorance of the underbody. Scale was a difficult matter for the sailor, and many models fail on this count alone, with over-sized spars and fittings. But perhaps the greatest danger of misinformation comes from the old model re-rigged by the sailor of a later day. Fortunately this danger is now well appreciated and the chance of anachronism following such a combination is being reduced in all museums.

A further source of information lies in the work of others like ourselves. In my experience it is enough that one is interested in ships, to give him the results of a fellow worker's labor, and not only here, but in museums abroad I have swapped data and have had later correspondence with chance-met students. Technical marine French is difficult but I've had good help from the people of the *Musée de Marine* in the Louvre, and from Monsieur Rougeyron of the Rue Saint Georges. I find directors of museums most cordial to the real student as distinguished from the sight-seer, and have pleasant memories not only of the Louvre but of South Kensington, the United Service, and Greenwich as well. Our own Navy Department is courteous and helpful in answering questions coming within its province and has a wealth of material for one who might be able to spend a lifetime in editing it. The Library of Congress has furnished me with photostats of prints, and at Technology are the splendid Clark and Taylor collec- (*Continued on page 44*)



LITHOGRAPH: CLIPPER SHIP "HOUQUA" OF NEW YORK (1844)



U. S. Geological Survey

SITE OF THE PROPOSED BOULDER DAM

BOULDER DAM

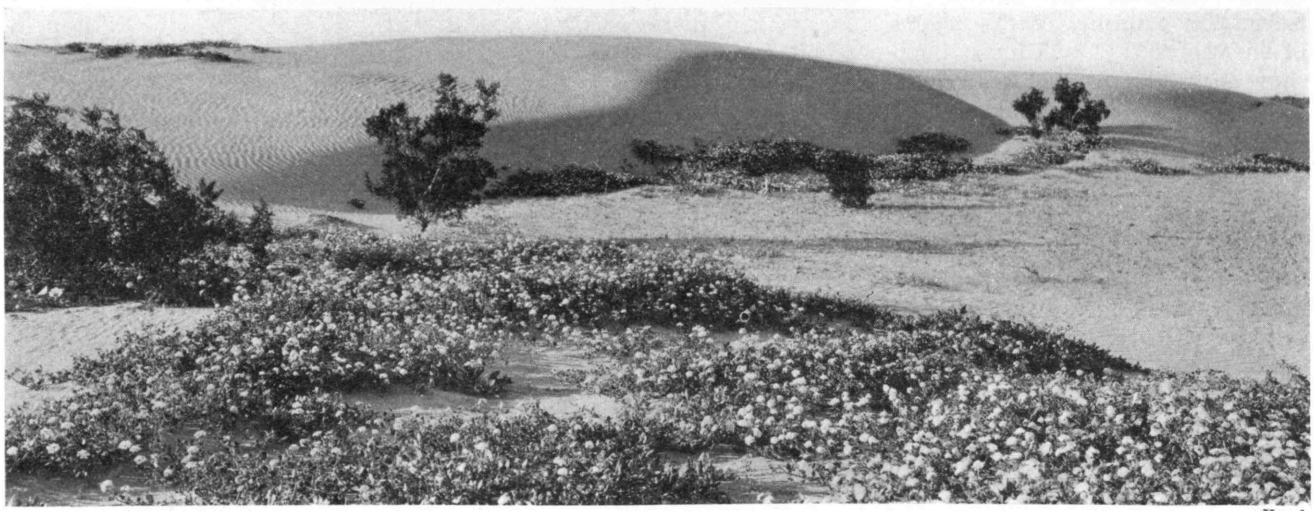
Its Political and Engineering Aspects

By Frederick H. Newell

"WATER POWER is a political issue, not a business one," says Thomas A. Edison (*Saturday Evening Post*, January 5, 1929). This fact should be kept clearly in mind, especially by engineers and economists when they attempt to appraise the Boulder Dam Project. It is a government, not a business proposition; it must be judged by other than purely utilitarian standards. The business man might well hesitate to invest his own money; but the statesman, with visions of future prosperity, courageously ventures the taxpayers' money. Who knows what great, though intangible, results may follow? Let me review briefly the influences that impinge upon the Colorado River situation.

On December 21, 1928, Congress authorized (not appropriated) $165,000,000 for the construction of Boulder Dam. The principal feature of the enterprise is the storage of the flood waters of the great Colorado River of the West, a river with an enormous drainage area largely of arid lands (244,000 square miles) and an ordinary flow comparable to that of the Hudson River, whose drainage area is only 13,400 square miles. A dam, presumably the highest in the world, over 550 feet high, to cost $70,000,000 will create a reservoir with a capacity of 26,000,000 acre-feet in the form of a long narrow lake in the canyon of Colorado River. The water flowing from this lake will be adequate to develop, at a cost of $38,200,000

SAND DUNES ON ROUTE OF ALL-AMERICAN CANAL

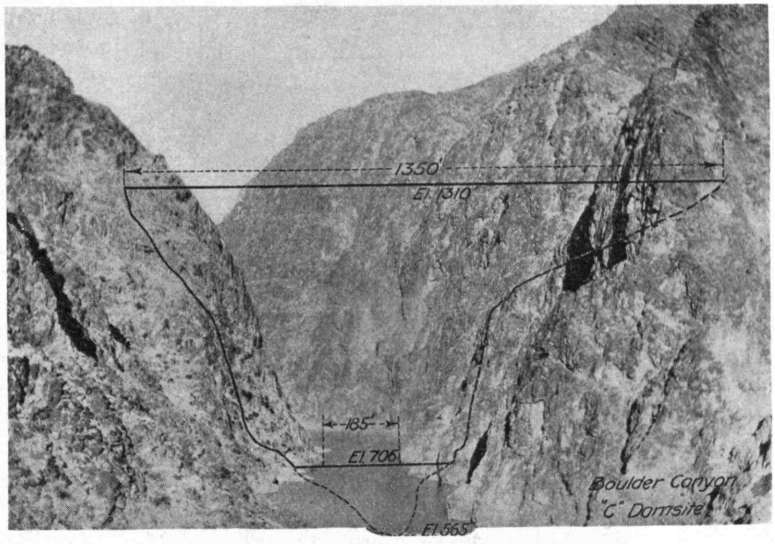


Hetzels

for machinery, from a half million to a million horsepower, equalling or exceeding the output of the Ontario Power Company at Niagara Falls, said to have cost $80,000,000.

The cost per horse power including dam and power plant will be high. On this point Major General Sibert and his fellow members of the Colorado River Board, reporting on the economic feasibility, are quite conservative. They say: "When this project was first proposed, the cost of steam power in Southern California was such as to leave a reasonable margin of profit above the probable cost of hydroelectric power generated at the proposed power plant. With the reduction in costs of power generated by steam, this margin has been greatly reduced."

The next, the really crucial step from the standpoint of the business man, determines this point. Before appropriations are made by Congress to begin actual construction, contracts must be secured sufficient in the judgment of the Secretary of the Interior to meet operation and maintenance expenses and to insure repayment within fifty years of the construction cost together with interest thereon at the rate of four per cent per annum.



SKETCH SHOWING HOW DAM WILL BE BUILT INTO CANYON

It is reported that "either in conjunction with other agencies or by itself the Southern California Edison Company will agree to utilize all the power of the falling water at Boulder Dam, and to pay therefor the maximum price which can be paid without financial loss." Realizing the difficulties experienced in Congress in disposing of the power from Muscle Shoals it is apparent that there may be a sticking point here.

The first use of this hydroelectric power, the one which may be said to stimulate the activities in the enterprise, is that of employing 200,000 horsepower to pump 1,500 second-feet of water over the mountain passes 1,700 feet high to the cities of Southern California. Their growth and the development of the surrounding country is dependent immediately upon securing more water of good quality and in ample quantity. Los Angeles has already built one of the longest and boldest aqueducts in the world, bringing water from Owens Valley, a distance of over 250 miles, at a cost of $23,000,000, and with a capacity of 420 cubic feet per second. Because of this water supply the city's growth has been phenomenal. The only limit to continued expansion in the population, wealth and industry, seems to be that set by the requirements for more water. There is not enough to fill the aqueduct at all times. Here is the reason why the people of Southern California, by no means lacking in optimism, are willing to work and spend untold thousands of dollars in "propaganda," that is in educating their fellow countrymen. If only they can induce the great body of taxpayers and their representatives to advance the millions required, they will undoubtedly agree to repay the investment with four per cent interest.

The amount of water in Colorado River varies greatly from season to season and from year to year. There are periods of drought when the mighty river shrinks to 1,200 second-feet; an amount hardly sufficient to float the ferry boats. Again it increases in volume until it equals or exceeds Niagara River with its flow of 220,000 cubic feet per second. No one has yet measured the extreme floods which are reputed to go over 300,000 or even 400,000 second-feet. A number of dry years may be followed by a succession of these great and destructive floods. It is to correct this condition that a storage reservoir above Boulder Canyon or elsewhere has been suggested.

The rainfall and melting snow from portions of seven states unite to form the Colorado. Some of the tributaries rise in the high mountains, the backbone of the continent. Coming from forested or partly snow-covered peaks, these rivers have a steady flow. Others are dry channels filled to overflowing at irregular intervals by cloudbursts which sweep everything before them.

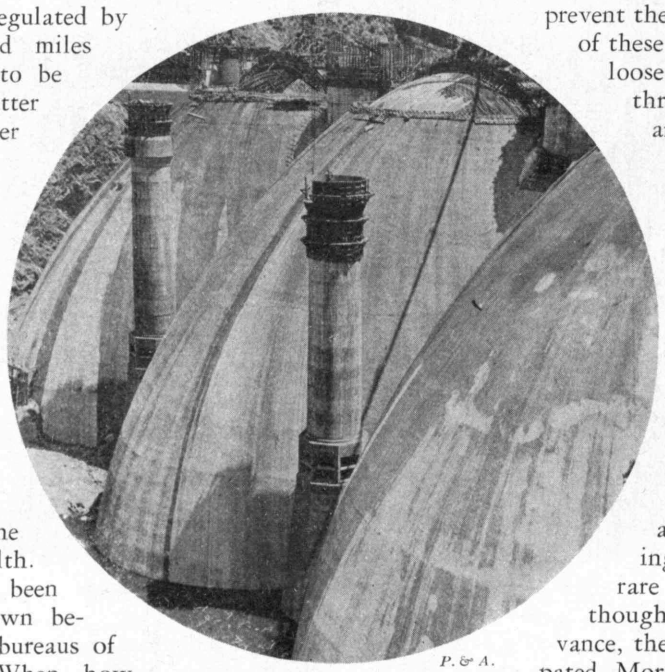
Each of the seven states has different and at times conflicting interests. It was hoped that these might be reconciled and that a fair division of the water might be agreed upon. At the outset difficulties were encountered because as yet we have no well established or fundamental principles governing the use of flowing waters. To whom do these belong? This is the question which has been debated endlessly. It has been assumed that if the Federal government and the seven states concerned could agree upon this point, the rest would be easy.

First and foremost it was agreed in the November 24, 1922 Compact that the four upper states, that is, those above the canyons of the Colorado, should have 7,500,000 acre-feet annually to be divided among themselves, that the three lower states were to have an equal amount to be divided among themselves and that a residue should be agreed upon as the share going to Mexico. Here is where the international complication comes in. Some patriotic Americans insist that no water should be allowed to go to the strip of dry land near the mouth of the river across our very unfortunately drawn southern boundary. These dry lands, though owned largely by Americans, have been considered in one way as a menace because separated from similar lands in the United States by an imaginary line or by a barbed wire fence, they are not under the

restrictions of our laws, notably regarding prohibition as Asiatics and of alcohol. The cheap labor of Japanese or Chinese, as well as of Mexican peons, permits the production of cotton and tropical fruits, competing with some products in the United States.

Mexico, retaining this strip of arid land and deriving from it large revenues, is naturally solicitous not only of its sovereignty but of the preservation of every right and privilege which an independent nation may claim. It is true that the water all originates in the United States, but under the law of nations the claim may be made that the river should be allowed to discharge through the ancient outlets into Mexican territory. As to whether or not Mexico will be satisfied with a small supply regulated by the dam, several hundred miles above, is a question yet to be settled. This is now a matter of negotiations to ripen later into a treaty.

Arizona, one of the three lower states, was not fully awake when the people who acted on its behalf entered into the tentative compact. The State had done relatively little in the way of developing its own water resources, the people had been more interested in mining and cattle, and had not seen in its waters the true source of future wealth. Few measurements had been made and little was known beyond that ascertained by bureaus of the Federal Government. When, however, the legislature was called upon to act in confirming the compact, there was a reaction. The State began to see that the proposed division of water and the building of Boulder Dam might destroy future growth. It refused to come in on the ground that its share of the water was inadequate. Appeals were made and are being continued for a revision of the entire plan based on a more complete knowledge of the facts. It is quite possible that such further studies may reveal opportunities for building the storage dam higher up in the canyons at points where water can be taken out by gravity and the enormous expense of pumping may be reduced.



P. & A.

UPSTREAM PHOTOGRAPH OF COOLIDGE DAM ON GILA RIVER, ARIZONA

Tired of the opposition of Arizona, the Congress finally authorized the building of Boulder Dam upon agreement by six states, giving Arizona until June 25, 1929 to join with the others. On that date President Hoover issued a statement making effective the compact between the six states. Arizona has not come in but protests even more vigorously. This protest may evolve into a case before the Supreme Court of the United States, one bringing in far-reaching questions.

Meanwhile plans are being prepared and everything made ready for active work when Congress appropriates the necessary money in 1930. These proposed works consist of four tunnels each fifty feet in diameter and a mile long. Two of these will be used as permanent spillways and the other two will supply water to the power houses intended to generate enough electricity to pay for the entire project. This is, of course, on the assumption that the electric power can be sold at a profit.

By means of these tunnels the river will be diverted from its bed and excavation carried on in the loose material until this is removed to bed rock. To protect this place, dams must be built across the river; the upper coffer dam eighty feet in height, must be strong enough to divert the flow of the Colorado River into the tunnels even in flood time. The lower dam is to prevent the water from returning. Both of these temporary dams must be on loose river material. The leakage through them may be great and will necessitate expensive pumping operations as the workmen dig down to lay bare the foundation rocks. This work may progress rapidly if conditions are found to be as anticipated and if the river will behave in a normal fashion, but those of us who have built huge structures of this kind are apt to be rather pessimistic. It seems to us as though Nature was waiting to give us a jolt. It is rare indeed to find that even though carefully explored in advance, the foundations were as anticipated. More than this, Nature seems to take delight in pouring unprecedented floods upon us when we are in a critical situation. For example, upwards of seven floods in rapid succession, most of them exceeding the tales of the oldest inhabitants, came down on us when we had opened up the foundations of the Roosevelt Dam in Arizona.

With plenty of money and the enthusiastic support of Congress it is possible to build and operate a great structure of this kind. Whether it would pay or not in the commercial sense, as before stated, is another question, one involving uncertainties and to which too little attention has been paid in the opinion of many experienced engineers.

Tied in with this enterprise, in the popular mind at least, are two quite distinct operations, so joined with the scheme as to render it more popular or interesting. The first of these is flood protection for the Imperial Valley or Salton Sink. Here is a curious topographic feature, a depression or bowl, mainly in the United States, to the west of the mouth of Colorado River and with its bottom 300 feet or more below sea level. It is in many respects comparable to the Fayoum to the west of the Nile in Egypt. This depression, like the Fayoum, in geologic times was (*Continued on page 48*)

NAVAL ARMAMENT REDUCTION

A Proposal for Solving the Yardstick Enigma

By William Hovgaard

THE IDEA OF DISARMAMENT and hence of a reduction in naval armaments has its origin in a demand for economy and a revulsion against war measures in general, but unfortunately, when it has been attempted to carry this sound and noble idea into practice, the negotiations have become tainted with suspicion and fear, two of the most active instigators of war. Probably these sentiments cannot be kept entirely out of the negotiations so long as a World Community does not exist, but much depends on the method of approach. It will be here attempted to show that the method at present pursued is based on the principle of competition and that therewith the above-mentioned sentiments are called into play. Under these conditions the negotiations are likely to be difficult and protracted and if, nevertheless, a result is attained, it will be in spite of and not because of the method. It will be shown also that a direct and simple method exists by which reduction in armaments can be handled entirely by statesmen and economists, so that technicalities, including invidious comparisons between individual ships or categories of ships and the services for which they are used, can be avoided.

From what we know of the negotiations and conversations that are in progress concerning a reduction in armament it appears that efforts are made to establish a state of parity in naval strength between the United States and Great Britain. After that it is the intention to seek an agreement with France, Italy, and Japan based on certain strength ratios relative to the standard set up by the two first-named powers.

Apparently it is proposed to adjust the naval strength by a method often referred to as "limitation by categories" according to which parity or a certain ratio of strength is to be established within each of the important categories or classes of ships. Although some powers, such as France, would prefer adjustment by what is called "global tonnage," treating the total tonnage of each navy as an entity, England in particular has insisted on limitation by categories, in which demand it has been supported by several other powers. It is frankly argued that if perfect freedom is allowed in the composition of the various fleets, one of them might concentrate on a type which would be specially dangerous to the neighbors. France, for instance, might build a fleet of submarines so powerful that it would constitute a danger to the safety of England. This shows clearly how the consideration of war possibilities and therewith fear and suspicion enter into the negotiations and are liable to become the controlling factors.

The discussion of disarmament has become a discussion of armaments. It is no longer a question of reducing the naval strength but rather a question of increasing it within each category of ships, so as to match the strength of that navy which for reasons of its own requires the greatest force in any one category. In other words, we have competition, although in a somewhat restricted form.

Each country has its own strategic problems; one country, such as England, must have a large number of cruisers, in order to protect her commerce, another finds it of advantage to concentrate on submarines, because it cannot afford to build battleships and must be satisfied with a defensive policy. Other powers may wish to concentrate on airplane carriers and others again on destroyers. Now, if the method of categories is followed, parity can only be obtained by tuning up to the maximum value in each category. Fixed strength ratios lead in the same direction.

Hence the method creates a natural tendency to augmentation of the naval forces, and the only way in which reduction can be nevertheless attained, is by prevailing upon those powers who require the greatest forces in each category, to reduce their requirements. But it is at once clear how difficult it must be to persuade a country to reduce her naval forces below a certain point which their experts declare to be an irreducible minimum.

In order to facilitate an agreement under the circumstances, it has been proposed to apply formulas for measuring the naval strength, the so-called yardstick method, but as shown elsewhere* by the writer, this method seems *a priori* doomed to failure, on account of the inherent incommensurability of the various military qualities of warships.

It is of interest to note that as these lines are being written† it is reported in the press that the Japanese Government has informed Great Britain and the United States of its belief that the level at which Anglo-American cruiser parity has been tentatively fixed is so high that it will compel other nations to enlarge their fleets instead of reducing them. If this report is correct, it corroborates in a striking manner the criticism here made of the present method of procedure.

IT appears that if a material reduction in armaments shall be achieved, the method must be placed on a basis by which fear and suspicion are eliminated even if competition cannot be entirely excluded. Such a method, it is believed, is to be found in reduction of the naval budgets. A limitation of the sums spent on war matériel alone has been formally advocated by the French, but it was opposed by the United States and England. It is here proposed to reduce the entire naval budgets, comprising expenses to personnel as well as matériel and in order to meet the objection made in case of war material, that the price level varies from one country to another and from one year to another, it is proposed to express the naval

* London *Engineering*, July 26, 1929; New York *Times*, July 28, 1929; Boston *Evening Transcript*, August 15, 1929, and September 27, 1929.

† September 28, 1929.

budgets, not in money value, but as a percentage of the total governmental budgets. As it is believed that this solution has not been proposed or discussed before in the negotiations that have taken place on disarmament, it shall be here explained more fully.

Suppose that each nation submits its own figures for the total budget and for the naval budget, which it considers to be reasonable and in accordance with recent practice and with probable requirements in the near future in the absence of a convention on reduction. Suppose further that international agreement is obtained as to these figures and hence as to the respective percentages which the naval budgets form of the total budgets for each country. It would then be a simple matter to effect a reduction without altering the relative strength of the various navies by simply reducing those percentages in the same proportion for all countries. In this way differences in the purchasing capacity of money would be eliminated and the most serious objection to the budgetary method would be thus removed. Also differences in expenditures due to variations in naval organization and in the standard of living would be eliminated. The greatest difficulty in applying this method would probably be the determination of the original budgetary percentages, because competition might here come to expression, but, as stated above, since the budgetary problems can be dealt with entirely by statesmen and economists, controversial matters of technical details and strategical questions need not be discussed and an agreement can be more readily attained.

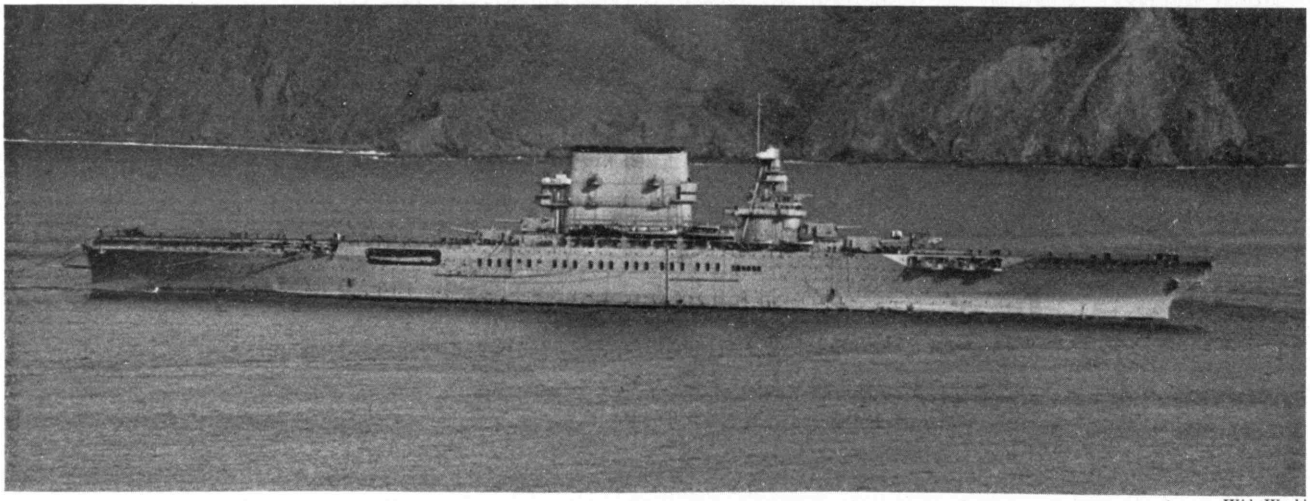
It might be objected that naval budgets comprise several civil or non-military items while some are partly civil and partly military, and that hence it will be difficult to make a fair and equitable comparison. This difficulty, however, is insignificant if there is an earnest desire for reduction, since most of the non-military items can be eliminated without doubt or question, and the increments of those that remain are of secondary importance.

There is, of course, nothing in the mode of reduction here proposed which precludes additional agreements as to a limitation by categories; but for reasons which have been sufficiently explained above, it would seem very unfortunate if this principle should be injected into the simple budgetary method. It seems best to grant every country perfect freedom to develop her navy in accordance with her own interests. If, under this arrangement, one of the powers should be threatened, say by an abnormal development of submarines by one of her neighbors, she would be free to reply by a proportionate development of anti-submarine defenses within the limits of her allotted budget.

A great advantage of the budgetary method is its completeness, in that it comprises all naval items: ships, shore establishments, personnel and preparedness, while the present method deals only with the ships. While a reduction in the number and tonnage of ships may bring some immediate relief, it offers no guarantee that a corresponding reduction in expenditure will be realized. It is only necessary to draw attention to the Naval Budget of Germany, which in spite of a drastic limitation in the number and tonnage of ships appears to be abnormally great. The German battleship *Ersatz-Preussen* has cost twice as much as the treaty cruisers of the same size built in England.

It is true that even a very great reduction in armaments would not affect the fundamental causes of war and hence would not remove the danger of war, but it would have a sobering and soothing effect. The war machinery would be less formidable and threatening, alarming naval expansions could not occur and would be replaced by a state of stable tranquillity. Every nation would try to obtain the best result on the allotted money, so that economy and efficiency would be likely to result. There would be no haggling over the size and number of ships or the caliber and elevation of guns. Much irritation would be avoided. Shore establishments would be reduced to a minimum consistent with efficiency. Obsolescent ships would be voluntarily scrapped at once and the naval forces would soon be reduced to a point consistent with the new financial conditions. After a few years a normal state of the naval forces would be established, in which the relative strength of the different navies would be essentially the same as before the convention was entered into.

In conclusion the writer wants to emphasize that the criticisms contained in this article are levelled, not at the men who earnestly and honestly work for a reduction in armaments, but at the method which it is understood that they employ.



Wide World

FORESTALLING DEATH

The Cow's Contribution to Human Longevity

By James A. Tobey

IS it possible to extend life? If it is possible, is it worth while? In this advanced and enlightened era in which reckless and dogmatic assertions are rampant, is it presumptuous to claim that you and I and the rest of us have hopeful prospects of living longer and possibly physically better lives than did our forebears?

These are questions to intrigue philosophers and pundits and those superior individuals known as biologists, but the answers to these queries are also of some faint interest to the remainder of us, even the engineers, many of whom are reputed to be able to derive value and enjoyment out of salubrious existence and healthful longevity. The solution to the baffling problem of life prolongation has been sought for countless ages. The greatest charlatan of all time, Cagliostro, claimed in the eighteenth century to have discovered that elusive compound, the elixir of life, but the prince of quacks died, somewhat prematurely, without having revealed the secret. None of the explorers in the realm of eternal life, none of the necromancers or alchemists of old, none of the gazers at crystals or the readers of the stars, have been successful in their quest for the fountain of youth.

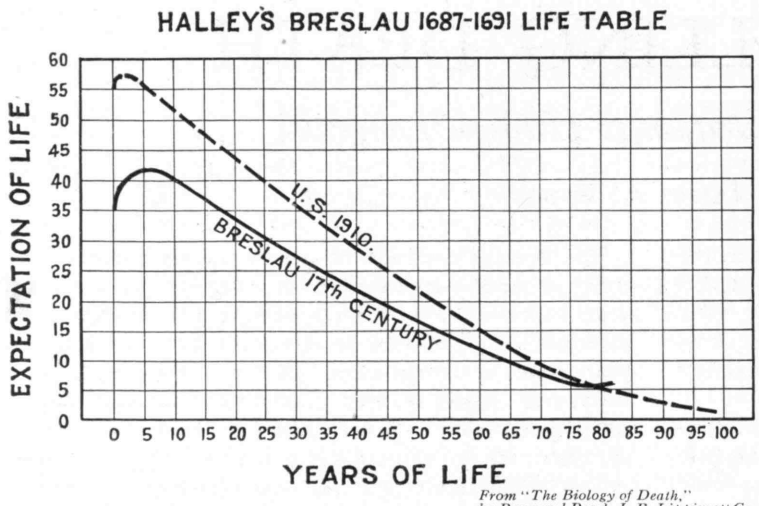
Modern science has done better. It has demonstrated that life can indeed be extended. It has shown that death, inevitable climax to life, can actually be postponed in many instances. It has almost realized the prophecy of the psalmist that the days of man on earth shall be three score years and ten, a prediction which never has been an actuality for any race as a whole.

Individuals, many of them, do live, of course, to the proverbial seventy years. Many live much longer, though only about one person in 25,000 in this country reaches the age of a hundred. But the average span of life in the United States has never been as high as three score and ten years and so far as is known, the scriptural ideal has never been attained in any civilization or in any nation at any time, considering the people as a whole.

The average duration of life in the United States is today about fifty-eight or fifty-nine years, or some sixteen years short of the proverbial ideal. In 1910 it was about fifty-two years; in 1880 it was from forty to forty-five years; and, it is estimated, that in 1790 it was only thirty-five. Thus, in fifty years in one country alone, some fifteen years have been added to the average length of life, or to the expectancy of life, as the statisticians call it. What results will the next fifty years see in life prolongation? Certainly an average of at least sixty-five years could be promised, and promised soon, if the public would grasp the opportunities for health protection which science now offers to the people. Seven years ago the American Public Health Association in solemn convention assembled made bold to resolve officially that the maximum expectancy was far from having been achieved and that the next half century would promise a span of healthy existence even beyond the proverbial three score and ten. Already that prophecy has been partially realized.

The remarkable increase in the average span during the past half century represents an increase in the proportion of persons who live longer. The extreme span has not appreciably altered, for a few individuals have probably lived to great age in every civilization. An average life expectancy of fifty-eight years does not mean that most people will die at that age. Moreover, a person alive at fifty-eight may still expect to survive for another sixteen years, according to the so-called life tables, which have been constructed as the result of accumulated experience.

The peoples of the past did not live as long as we do now and seldom did they live as happily, despite sentimental allusions to the "good old days." At the very time when the psalmist was predicting a life span of seventy years, and in the period when Egypt was a province of Rome, the average duration of life was only thirty years, according to reliable estimates. It was,



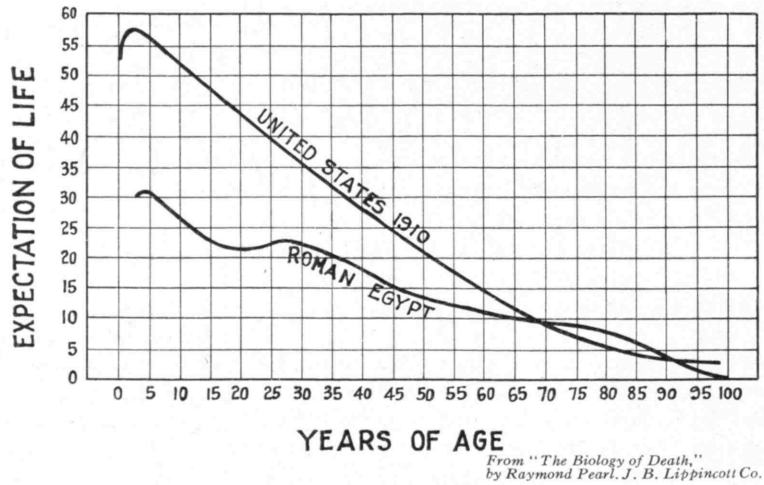
From "The Biology of Death," by Raymond Pearl. J. B. Lippincott Co.

LONGEVITY IN THE FOURTEENTH CENTURY AND NOW

however, no more than that several thousand years later, for a life table of 1780 in England gave a figure of only thirty years.

In 1693, Halley, of comet fame, got up a life table based on the statistics of Breslau, which allotted an average life span of thirty-three and five-tenths years to the people of that community. In 1841 William Farr prepared a table for England which revealed a life expectancy of about forty or forty-one years. In the United States the first authoritative data on this subject was that compiled by a Massachusetts clergyman, Edward Wigglesworth, who computed thirty-five and five-tenths years as the average for the people of Massachusetts and New Hampshire in 1789. In 1850 other tables showed the Bay State averaged then only thirty-nine years.

The answer, then, to the question as to whether life can be prolonged would seem to be in the affirmative, basing the conclusion on the fact that it has been extended and still is being extended. An undeniable increment of twenty-five years in the average duration of life in the United States between 1800 and 1920 is good evidence that real progress has been made in life conservation. During the first quarter of the Twentieth Century life has been lengthening at the rate of about forty years per century.



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Positive as is this demonstration that the aggregate length of life has been extended, this data could by itself present a false impression and it is, therefore, desirable to break it down into its component parts. Although some one once coyly remarked that there are liars, damned liars, and statisticians, this profane stricture on the credibility of figures is not to be taken too seriously. Figures do not prevaricate when they are accurately determined, properly used, and correctly analyzed and interpreted. There is no sophistry in this matter of the span of life, but it is worth while to consider *how* it has increased.

The curve of death starts high at birth and it is high again in the later years of life. If mortality is plotted on the vertical axis and age periods on the horizontal, you will find that this curve for our current data begins with a rate of nearly 100 per 1000 population at birth, but drops rapidly to the third year when it straightens out somewhat for a while. Then it rises gradually after the tenth year of life until it is going up rather parabolically from the forty-fifth year on. Infant deaths are equalled in about the seventy-ninth year.

Shocking as seems this high infant death rate, it is less than half what it was at the beginning of the present century. At that time there were 170 deaths of babies under one year of age to every 1000 live births; now there are only sixty-four. So, too, there have been corresponding, though less marked, decreases in death rates throughout the early periods. Here, then, is one explanation for the increase in the average length of life. If only eight per cent of our babies fail to reach their first year, instead of sixteen per cent as formerly, the whole average is obviously raised.

What about the other end of this curve? That is probably of more immediate significance to the readers of this magazine, most of whom are college graduates, and many of whom have reached a fairly mature, perhaps even middle, age. If life is to be expanded in the most efficacious manner, it is apparent that it must be prolonged in the period past fifty.

Here, unfortunately, we strike a snag. Although there has been a gratifying increase up to this age, the increment at that time becomes almost negligible, and afterwards it does not exist. There are even those who claim we are going backwards. In a recent issue of *Science*, a professor of mathematics at Dartmouth College maintains that all of the great gains at the early ages are now being more than offset by the losses at the advanced ages. This writer even claims that the average length of life in this country is now actually decreasing.

Despite such a single pessimistic viewpoint, there is ample hope for the future. There is available extremely significant evidence that life prolongation in adult life is as feasible as in early life. To be sure, deaths from heart disease, somewhat more frequent in later life, are now the leaders in causing mortality in this country. Tuberculosis, long the captain of the

men of death, and frequently the despoiler of young manhood, has dropped to fifth place. Ahead of it are heart disease, cancer, nephritis, and cerebral hemorrhage, in that order.

These changes in types of mortality are due to the conquests of sanitary science. Under the leadership of such great sanitarians as the late Professor William T. Sedgwick of the Institute and many of the pupils trained by him, public health workers have been successful in ridding the world of many of its manifold plagues, or else have reduced their prevalence to a comparatively innocuous status, at least with respect to their previous prevalence and virulence.

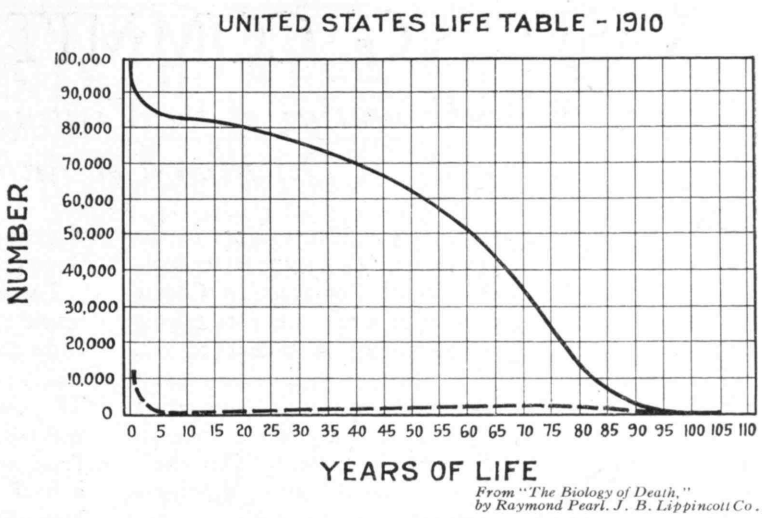
To the sanitarian belongs most of the credit for the present achievements in life prolongation, though biological, economic, sociological, and educational factors have also played a part. The future accomplishments in this game of life will still be founded to a considerable degree on the efforts of those who are dealing with the environment of man. Typhoid fever, for instance, now causes a mortality only one-fifth as great as a quarter of a century ago. What is left of this disease after its demolition by sanitary science is rural rather than urban. Here is a poignant example of environmental control.

The traits of our ancestors have always been considered to play the most important rôle in producing longevity. If it has been customary for our forebears to live to a ripe old age, the chances are supposed to be favorable for us to emulate them. In other words, heredity has generally been looked upon as one of the chief influences in determining the length of a particular life.

This assumption is, of course, based on the hypothesis that the individual will overcome the hazards of his environment in early life, for while heredity may assist a person to recover from the ravages of a bacterial invasion, it may also fail to do so, as unfortunately, has frequently happened. The individual must, in fact, be able to cope with unfavorable environmental conditions throughout life. In many instances he may exert some personal control over his surroundings, so that his own health will be protected and promoted, but in many other cases, he must depend upon the organized efforts of society to safeguard the public health.

Among the important elements which may be classed as environmental is nutrition. The human experience of a considerable period of time, for eating is a fairly ancient art, has indicated that the nature of our diets may definitely affect longevity. It is a well recognized fact, for instance, that those races which have been nourished on foods containing a preponderance of dairy products have always been the most vigorous and long-lived, as well as the most important historically. The conquerors have been users of cows.

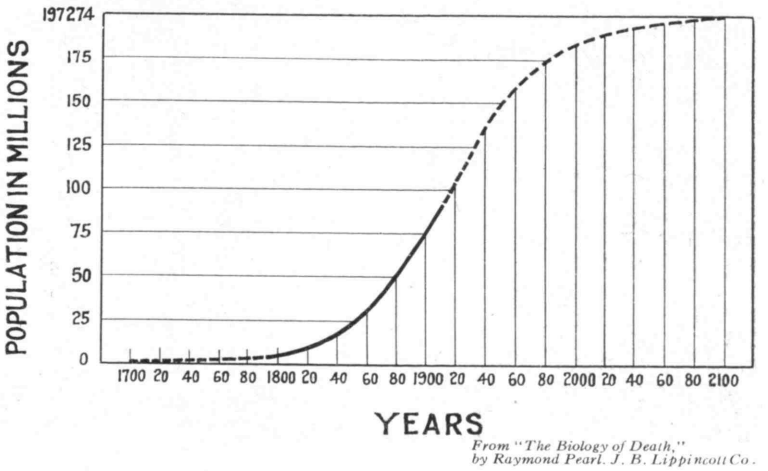
Now we have scientific evidence to support these age-long observations. About a year ago a report was made before the National Academy of Sciences in which it was stated that the influence of a single change in the food supply upon longevity seems to have been fully demonstrated. This significant report was rendered by Professor Henry C. Sherman of Columbia University, who is one of our leading authorities on nutrition, and who had been making notable contributions to the new science of dietetics for many years.



From "The Biology of Death," by Raymond Pearl. J. B. Lippincott Co.

The experiments of Professor Sherman were carried out on a flock of those docile laboratory animals, white rats. About 400 of them were concerned in this particular investigation in which two groups of these animals of identical heredity were given two diets. One of these diets was adequate from the standpoint of nutrition, for Professor Sherman still possesses rat families which have thrived on this particular diet for more than twenty-one generations. This fare consists of a mixture of one-sixth dried whole milk, five-sixths ground whole wheat, a little salt, and plenty of distilled water. Not very thrilling from the standpoint of variety, but certainly a nourishing regimen.

The second diet was not only adequate, but distinctly better and this superiority was obtained merely by doubling the amount of dried whole milk, so that the ratio was one-third milk powder, two-thirds whole wheat powder, with salt and water as before. By this change an *adequate* diet was converted into an *optimal* one, and some rather phenomenal results were obtained with it. The average (*Continued on page* 52)



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PEARL'S CURVE FOR U. S. POPULATION GROWTH

VISITING COMMITTEE REPORT

Covering the recent meeting of the Visiting Committee for the Institute's Department of Architecture*

THERE ARE at present some 220 students in the Architectural Design Course (IV), some 80 students more in the Architectural Construction Course (IV–A) and these together with a few students taking single courses bring the total number of students to 312. It is impossible to take more students in the present quarters and with the present staff. At the time of writing we cannot say definitely just how many of the students are to be graduated this year but in all probability there will be about twenty-four for the Bachelor of Science degree and ten or twelve more for the Master's.

We regret very much the retirement of Ida Dayton Loring who has been librarian for twenty-seven years — since 1902. She has seen our library grow from almost nothing to one of the great professional libraries of the country.

We regret to state that Assistant Professor A. S. Jenney '83, in charge of Building Construction, has been obliged because of ill health to sever his connection after many years. It will be difficult to fill the position with anyone who will bring to the Course more intelligence and interest than has Mr. Jenney.

During Professor J. O. Sumner's absence in Europe the history of art courses have been cared for by Associate Professor H. L. Seaver with general satisfaction. The jury work of the year has been carried on by a committee of Boston architects who have given generously of their time and ability. The Institute Musical Class under Stephen Townsend is, as you know, carried on in Rogers Building and the result has been that more architectural students take the class than any other Institute students. There is a great deal of interest shown and we feel that it is well worth carrying on.

To show the standing of the School in the outside world I will enumerate some of the distinctions that have come to Technology Architectural graduates during the last year in competition with their fellow architects. The Guy Lowell Prize — six months travel abroad — was won by Paul F. Nocka '28. The so-called Paris Prize competition for two years' study in Paris, on which a final judgment was held in September, was won by James D. Murphy '29. The Rotch Travelling Scholarship Prize — $2,000 for foreign study — has gone to Charles St. George Pope '27. This is now the fourth successive time that this prize has been won by a Technology man. The Priz de Roma was won by Sidney E. Waugh '27 with his "Steel," giving him $8,000. The James Harrison Steedman Travelling Scholarship of $1,500 for one year of travel was won by George E. Fischer, graduate student.

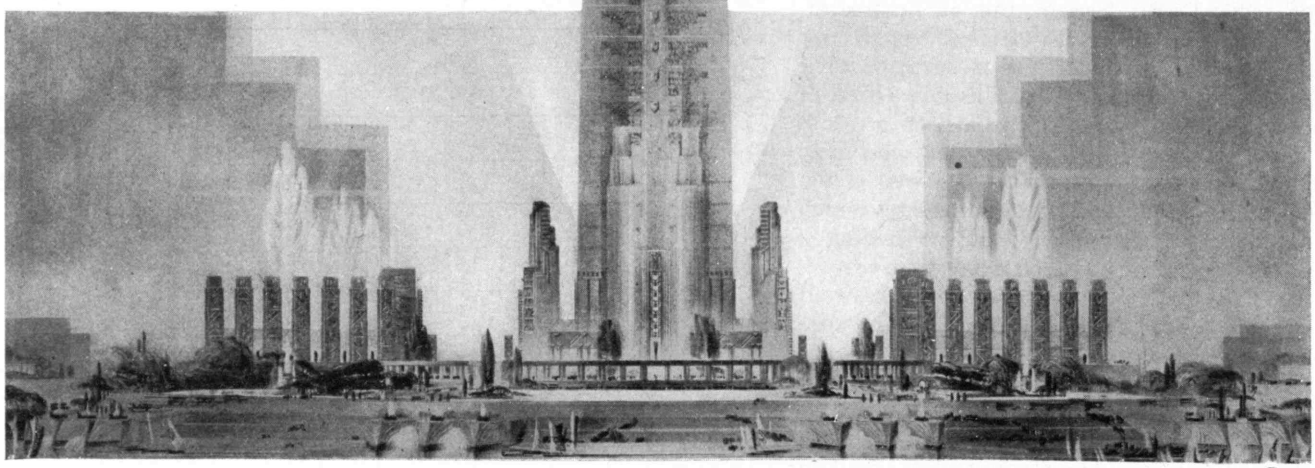
A very interesting international competition is now going on for the Columbus Memorial Lighthouse at San Salvador to commemorate the place where Columbus first set foot on this western hemisphere. Architects from all over the world — between 300 and 600 of them — have competed and the list has been boiled down to ten men; four of these men are from this country and two of the four are Technology men: Will R. Amon '23 and Donald S. Nelson '26. Among the honorable mentions one was given to Abram Garfield '96 of Cleveland.

It seems to us that the design work during the year shows steady improvement under the guidance of Professors Carlu and Gardner and their staff, while the general morale under Professor Emerson is all that can be desired.

Respectfully submitted,

H. J. Carlson, '92, *Chairman*

*This Committee includes A. Lawrence Lowell, President of Harvard University; John Lawrence Mauran '89, St. Louis, Mo.; Harry J. Carlson '92, Boston, Otto Kahn, New York.



Dreyer

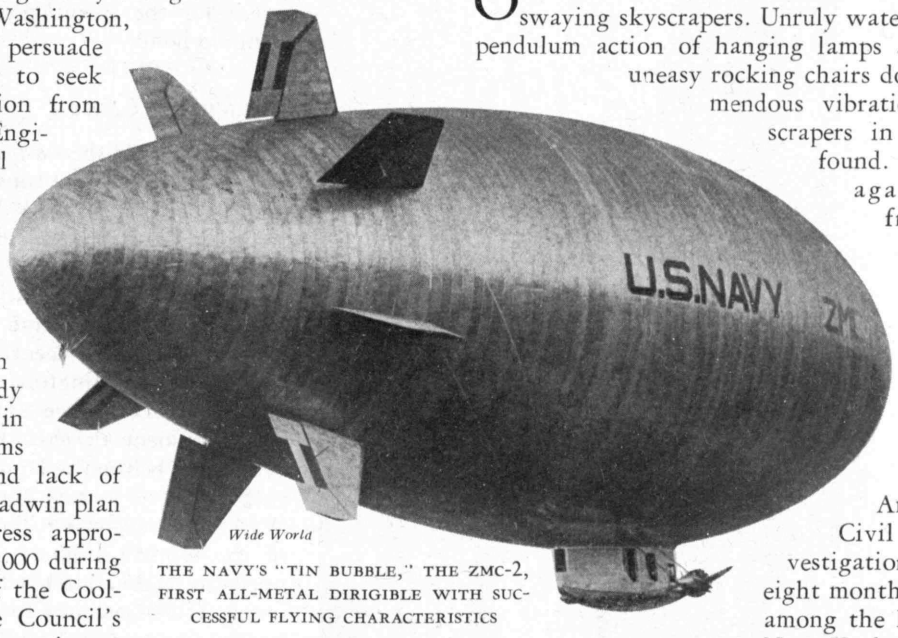
THE WINNING PARIS PRIZE DESIGN BY JAMES D. MURPHY, '29

THE TREND OF AFFAIRS

Flood Control Politics

MR. NEWELL'S contention in his article, "Boulder Dam" (page 16), that water power unfortunately is a political handball, not an engineering or business problem, might well have included flood control, for engineering and politics are now at loggerheads over plans for preventing another Mississippi disaster.

The landowners whose property will be subject to periodic flooding under the Jadwin "fuse plug" scheme, have been bellowing lustily enough to be heard in Washington, enough in fact to persuade President Hoover to seek advice and opinion from the American Engineering Council which represents the collective wisdom of more than 50,000 professional engineers. A report has been made by this body and it expresses in no uncertain terms disapproval of and lack of confidence in the Jadwin plan for which Congress appropriated over $300,000 during the latter days of the Coolidge régime. The Council's flood control committee, composed of Gardner S. Williams, Baxter L. Brown, John R. Freeman, '76, and Arthur E. Morgan, emphatically urges reconsideration, for "sufficient study of the engineering and economic plans of flood control . . . has not been made to justify the Federal Government in adopting any plan. . . . Your committee believes that the intent of Congress and the best interest of the nation were defeated by the constitution and action of the Board created to adjust the engineering differences of the Jadwin and Mississippi River Commission plans. . . . Therefore, your committee urgently recommends the creation by the Federal Government of a Board of Review composed of non-partisan and competent civilian engineers. . . ."



Wide World

THE NAVY'S "TIN BUBBLE," THE ZMC-2, FIRST ALL-METAL DIRIGIBLE WITH SUCCESSFUL FLYING CHARACTERISTICS

Perhaps it is not a coincidence that The Review in an article, "Needed: More Science in Flood Control" by Mr. Freeman in December 1927, sounded the same note and made the same plea. That paper still seems remarkably pertinent and applicable.

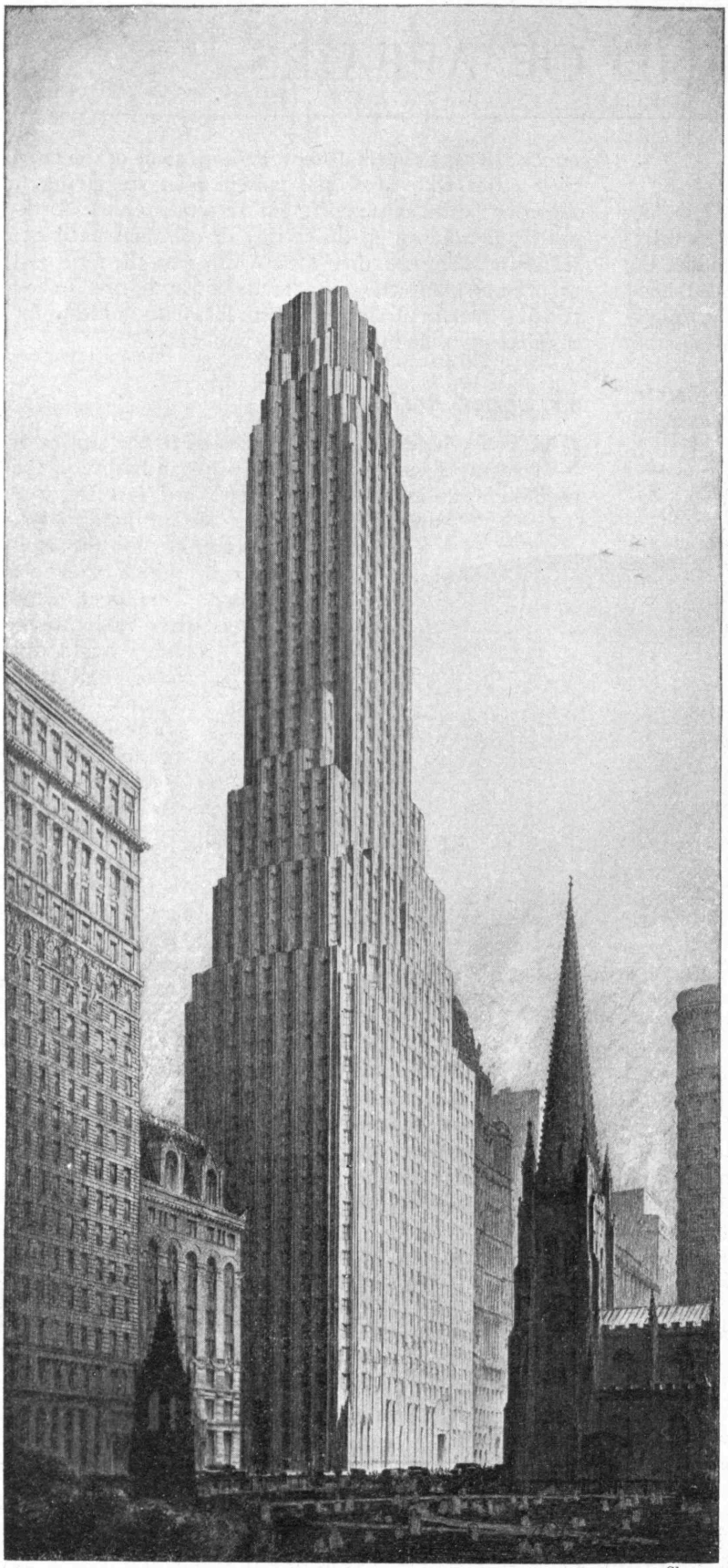
The President has lent a willing ear but it is feared that he is bound by the mistake of his predecessor and the Congress has listened also, but it has been too tariff-minded to take remedial steps. Perhaps some of the large river cities who favor the Jadwin plan are giving it vigorous political support, but Secretary Good, fortunately, is holding up the letting of contracts until the legislators complete their meanwhiling on the tariff and their inquiry into the intimate life of Mr. Shearer. When politics enter in at the door there is usually nothing for engineering to do but fly out the window.

Skyscraper Antics

OUT of whole cloth are made most of the stories of swaying skyscrapers. Unruly water in bathtubs, the pendulum action of hanging lamps and pictures, and uneasy rocking chairs do not indicate tremendous vibrations by the skyscrapers in which they are found. Nor does wind against tall, steel-framed buildings make itself sufficiently felt to account for these eccentricities. Such allegations, which are frequently heard, so interested the American Society of Civil Engineers that investigations over a period of eight months have been made among the high buildings of New York. The results will serve to quiet much of the fear aroused by stories of the terrific behavior of skyscrapers.

Two sorts of movement do exist in skyscrapers: leaning and vibration. The first is present in all tall buildings when there is present a difference of temperature and pressure. The sun striking one side of a tower causes it to expand, making the tower lean away from the sun, while a cold breeze at the same time will make the building contract and lean toward the wind or away from it, according to the relative effects of wind pressure and temperature. This movement requires minutes or hours to take place and is not visible to the eye.

Vibration owes its presence to the fact that a high building is an elastic cantilever, held by the earth at one end and free to vibrate at the other. Consequently a sudden gust of wind striking it may create sufficient push to start a vibration and further gusts of wind may break or increase the vibration, according to the timing with which they strike. Readings taken in New York's largest buildings show that even in the gale of last March no vibrations of more than an inch were observed. Since this motion means only half an inch off the vertical each way,



Shannon

RENDERING OF THE IRVING TRUST COMPANY TOWER NOW UNDER CONSTRUCTION AT ONE WALL STREET. ARCHITECTS: VOORHEES (GARDNER T., '90), GMELIN AND WALKER (RALPH T., '11)

and since most of the readings were nearer one-quarter of an inch, there is little to fear. Frequency of motion is found to be higher in towers of heavy, short construction, reaching the maximum of thirty vibrations per minute, while the tall, slender towers seldom register more than fifteen complete vibrations per minute.

Any pendulum-like object, if it is given a series of slight pushes, timed to its own frequency, will get to swinging violently. It is this characteristic of swinging bodies to respond to anything that tunes in on their own wave lengths that causes the swaying motion in hanging lamps, and other movable objects. The movement of a building of an eighth of an inch off the vertical can account for the swaying of six inches by a hanging lamp.

Skyscraper Contest

CERTAINLY the swaying of buildings is not deterring the construction of higher and higher ones in New York. In fact construction heights records, like pole vault and endurance flight records are broken as fast as they are made — that is on paper.

The published design of the Chrysler Building shown adjacently, now under construction on Lexington Avenue, gives its height as sixty-three stories or 808 feet. Announcement of this design had hardly been made before the Irving Trust Company set to work on its new home at Number One Wall Street, declaring *it* to be the beginning of the world's highest (see rendering on opposite page). But both Chrysler and the Irving Trust Company forgot that Al Smith had his finger in the building business. Their petty records were shattered by the claims made for Al's hotel on the site of the old Waldorf-Astoria.

For several weeks Al rested on his laurels but his reign was short. Rumors got around that the new Lincoln Building near the Grand Central Terminal was going to be eventually still higher. And so the matter stands in New York, although from Chicago comes a report that the new Chicago Tower will ascend to 880 feet with seventy-five stories. The Woolworth Tower, within the memory of many, the world's tallest (and it still is the tallest yet completed) has been relegated to the mediocrity of a mere 792 feet.

Aside from the humor of this Battle of the Century, there is rhyme and reason to the greater heights. A committee of the American Institute of Steel Construction, which has made a study of the problem, declares a height of 2000 feet feasible from the engineering, but not from the economic standpoint. The committee found that on land worth

$200 per square foot, a sixty-three story building would yield the greatest investment, on land valued at $400 per foot, a seventy-five story building. Beyond these heights the investment return decreased.

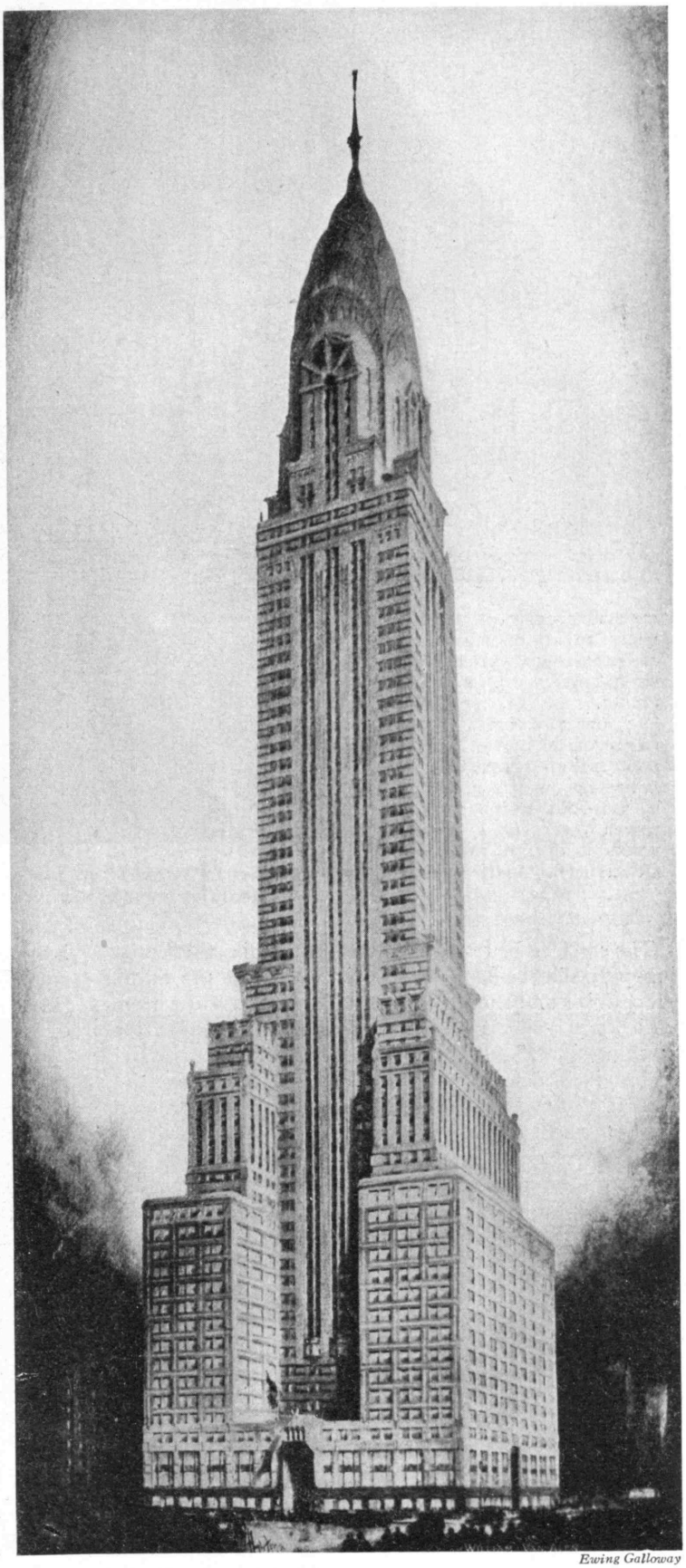
Weighing Dam Resistance

LAST March The Review described the preliminary work then under way at the Institute for the study of earth pressure against retaining walls, knowledge of which is essential for the design of earthen dams. Much has been achieved since the spring, and this summer newspapers the country over carried an abbreviated exposition of the first series of tests — merely enough to incite general curiosity as to their exact nature and method. The Review presents the following description based upon information prepared for it by Dr. Glennon Gilboy, '25, who worked with Professor Charles Terzaghi, recently resigned.

The many theories which have been evolved in the past to afford a basis for the computations of lateral earth pressures, have been based on the assumption that the backfill consisted entirely of an ideal material, cohesionless and homogeneous, with a constant angle of internal friction. These theories disagree with one another and with actual practice, for many reasons among which may be mentioned: (1) the ideal material assumed does not exist; (2) the conditions of equilibrium assumed are not necessarily valid; and (3) no account is taken of the effects of time nor of the effects of yield of the wall, both of which items are known to have an influence on earth pressure.

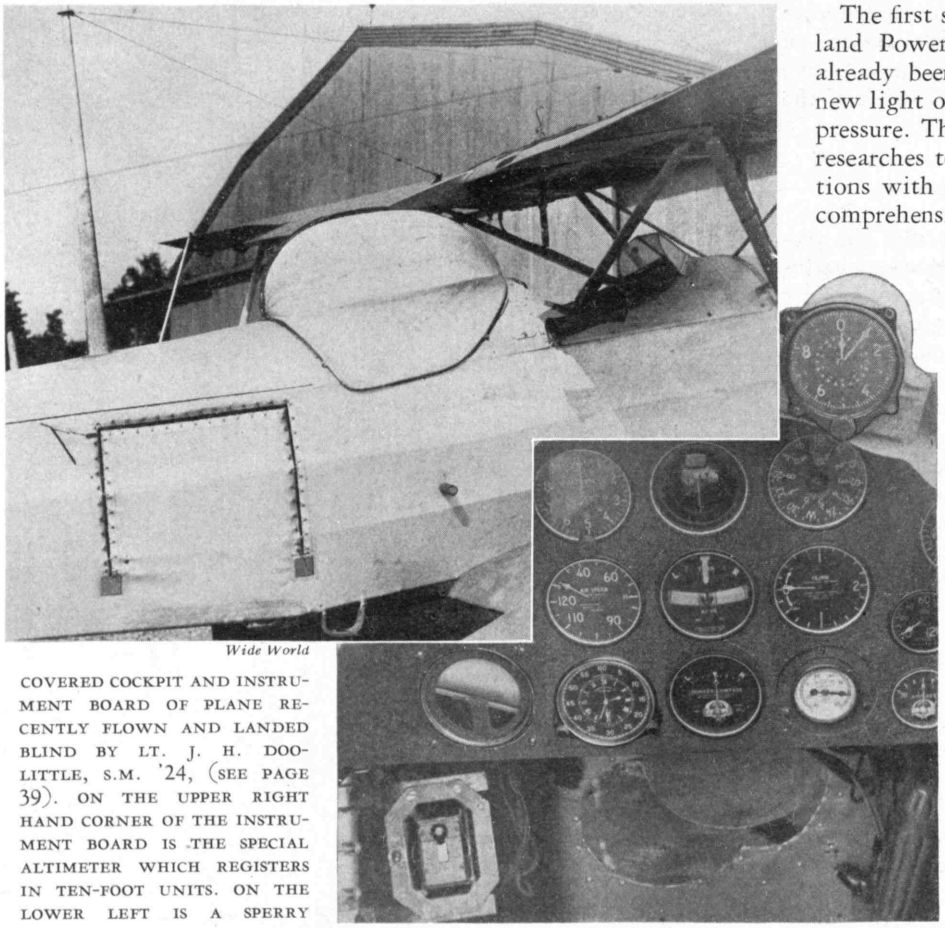
To better its design of an unusually long retaining wall, the New England Power Construction Company entered into a coöperative agreement with the Institute last winter for the purpose of installing apparatus to measure directly the pressure of earth on a retaining wall. Thus the present study had its inception. Sensitive apparatus was designed under the supervision of Professor Edward F. Miller, '86, Head of the Department of Mechanical Engineering, Professor William Hovgaard of the Department of Naval Architecture and Marine Engineering, John F. Dreyer, '29, and Henry P. Gibbons, '29.

The nucleus of the apparatus is a heavy reinforced concrete bin, fourteen feet square and ten feet deep. The bin has a floor and three fixed sides. The place of the fourth side is taken by the model retaining wall which is, in effect, a long gate freely suspended by its upper corners on two vertical hangers. These hangers are in turn supported by scales in which counter-weights are arranged to balance the weight of the wall itself. At the four corners of the wall are horizontal thrust bars bearing against scales.



Ewing Galloway

ARCHITECT'S DRAWING FOR THE CHRYSLER BUILDING, CLAIMANT FOR THE TITLE OF THE WORLD'S TALLEST BUILDING. ARCHITECT: WILLIAM VAN ALEN



Wide World

COVERED COCKPIT AND INSTRUMENT BOARD OF PLANE RECENTLY FLOWN AND LANDED BLIND BY LT. J. H. DOOLITTLE, S.M. '24, (SEE PAGE 39). ON THE UPPER RIGHT HAND CORNER OF THE INSTRUMENT BOARD IS THE SPECIAL ALTIMETER WHICH REGISTERS IN TEN-FOOT UNITS. ON THE LOWER LEFT IS A SPERRY HORIZON, GIVING THE PILOT AN ARTIFICIAL HORIZON FOR BALANCE. IMMEDIATELY BELOW IS THE RADIO DIRECTION FINDER, RESPONSIVE TO A COURSE SET BY RADIO BEACONS

The earth to be tested is filled into the bin, the retaining-wall side being held stationary. When the filling process is completed, readings on the two scales from which the wall hangs give a vertical component of the earth pressure. The sum of the readings on the horizontal scales give the horizontal component of the pressure, and the ratio of the readings of the upper pair of horizontal scales to those of the lower pair make it possible to determine the point of application of the pressure. The apparatus is designed so that the wall can be moved bodily outward a distance of more than an inch. Thus the effect of wall movement on the pressure can be readily measured. Apparatus is also provided for studying the effect of saturation and drainage, and the effect of constant loads applied to the surface of the soil.

Inasmuch as yielding of the wall has an important effect on the pressures it was necessary to design the apparatus for stiffness rather than for strength. Consequently the members are all of massive proportions and the retaining wall alone weighs fourteen tons. In spite of this tremendous load the supporting scales are so sensitive that the weight of a man standing on the wall can be measured to within two pounds. The movements of the wall can be controlled to within one-ten-thousandth of an inch and lateral pressures up to twenty-four tons can be accurately measured. Concentrated surcharges up to eighty tons can be applied to the surface of the backfill.

The first series of tests for the New England Power Construction Company have already been completed and have thrown new light on many obscure causes of earth pressure. The Institute plans to extend the researches to cover a wide range of conditions with the ultimate aim of compiling comprehensive and reliable data which cannot fail to be of lasting interest to the engineering profession. Reports of further results will be published from time to time.

Junkets

TOKIO (population 2,000,000) and, less recently, Mexico City (population 600,000) have entertained conferences which indicate that an international spirit prevails among professional men no less than among the Hoovers and MacDonalds. As this Review enters the mails a goodly company is assembled at the Japanese capital, metaphorically, if not actually, seated on logs, smoking their briars, listening to and discussing the papers of the World Engineering Congress. Professor Dugald C. Jackson, Head of the Department of Electrical Engineering at Technology' is in charge of the program committee that presents the American contributions (several of which are to be printed in forthcoming issues of The Review) to the Congress. Between papers the delegates are being carefully instructed in the intricacies of royal etiquette before they take their wives to call upon Emperor Hirohito (the 123d of his line) and Empress Nagako.

In Mexico City for five days late in September distinguished scientists from nineteen countries of the New World foregathered under the resounding title: First General Assembly of the Pan-American Institute of Geography and History. Coming as an outgrowth of the Pan American Conference at Havana in 1928, it had nothing to do with international politics, yet in the years to come it may exert a profound influence on the course of affairs in North and South America. As laid down at Havana and initiated at Mexico City, its purpose is to correlate geographical and historical projects throughout the Americas, to clarify frontier questions, to organize a great archive of historic maps and documents relative to this hemisphere, and to publish a geography and history of the Americas by 1935.

Three from the United States were designated to attend: Colonel Lawrence Martin of the Library of Congress, one of the world's foremost experts on maps; George Winton of Vanderbilt University; and Dr.

William Bowie, since 1905 chief of the Division of Geodesy, Coast and Geodetic Survey. With much practical experience back of him, Dr. Bowie is familiar with the progress of mapping and survey work throughout the United States, his field work having carried him from the coasts of Prince William Sound in Alaska to the Philippines. He it was who carried the first arc of triangulation across Porto Rico after the United States acquired the island.

GEORGE B. WATERHOUSE, HEAD OF THE IRON ALLOYS COMMITTEE DESCRIBED BELOW

Between now and the next Assembly which will meet in Brazil three years hence, the Institute will seek to bring about the coördination of topographic surveys that have already been made independently, and will do what it can to stimulate the map-making programs of different governments. The development of commercial airplane lines has emphasized the need for pushing forward the mapping of areas hitherto unexplored for airplanes now cover territory where there are neither railways nor highways. Unmapped areas in the New World are still very large and the scientist cannot apply scientific principles to agriculture and other great industries unless the geographer is there to supplement his labors. Dr. Bowie is authority for the statement that only forty-three per cent of the United States has as yet been topographically surveyed. Furthermore, many of the map sheets are inadequate to meet the modern needs of agriculture, mining, development of power, transportation and communication.

Iron and Its Alloys

EUROPEAN countries have been more fecund in the production of new alloy metals than the United States, a fact that doesn't require a World Engineering Congress for its demonstration. Our research has been sporadic, unorganized, and duplicative. The newly formed iron alloys committee of the Engineering Foundation has recently taken remedial steps by appointing a committee of nine, headed by George B. Waterhouse, Professor of Metallurgy at the Institute, to inquire into all "basic data on iron and its very numerous combinations with other metals and certain metalloids."

The work of the committee, which is to keep America in the front line of the special steel industry, is to consist of two parts. The first is collecting, putting into usable form, and appraising all the written material on these subjects so that it may be available for the convenient use of research workers, technologists, and engineers. The results of research now in progress in the iron, steel, and related industries will be published by this committee in the form of monographs for research workers and manuals for men in the shops and foundries. The second part will be to aid, promote, and organize research to obtain new basic information about pure iron and its combinations with other substances. It will be the work of the coöperating laboratories rather than of the committee to discover new commercial alloys. Five years and at least $150,000 will be spent to initiate what is hoped will be a permanent procedure.

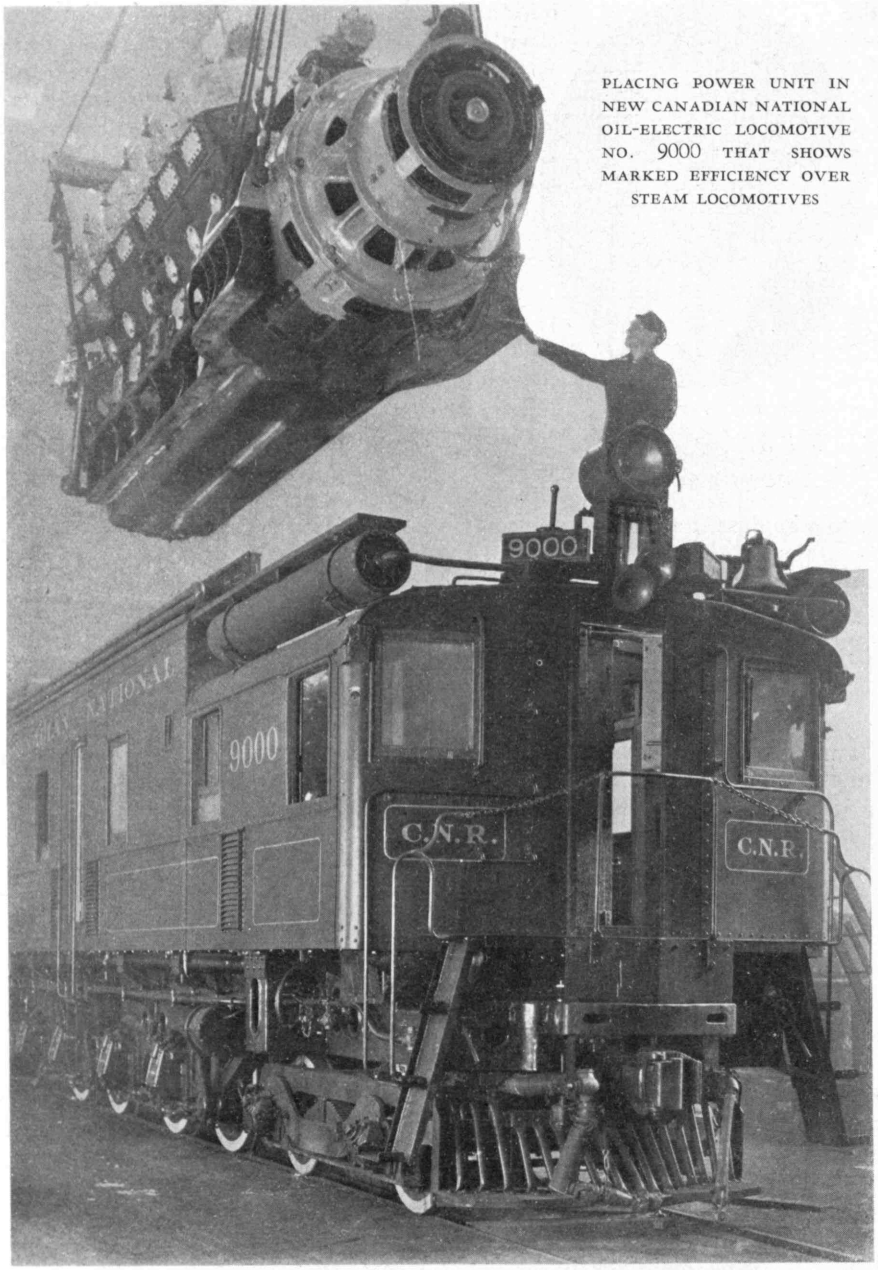
The personnel of the committee, besides Professor Waterhouse, is as follows: Dr. George K. Burgess, '96, Director of the United States Bureau of Standards; Scott Turner, Director of the United States Bureau of Mines; R. E. Kennedy, Technical Secretary of the American Foundrymen's Association; Dr. H. W. Gillett, Director of the Battelle Memorial Institute, Columbus, Ohio; Bradley Stoughton, '96, Head of the Metallurgical Engineering Department of Lehigh University; Jerome Strauss, chief research engineer of the Vanadium Corporation of America; T. H. Wickenden, metallurgical engineer of the International Nickel Company; and Dr. John A. Mathews, Vice-President of the Crucible Steel Company of America. In addition to this list, Louis Jordan of the Bureau of Standards will alternate for Dr. Burgess, and Dr. Charles H. Herty, Jr., Sc.D. '24, for Mr. Turner.

Besides the organizations represented by the committee, such societies as the American Institute of Mining and Metallurgical Engineers, the American Society of Mechanical Engineers, the American Society of Civil Engineers, the American Institute of Electrical Engineers, and the Society of Automotive Engineers are to coöperate with the Foundation.

One has only to talk with Chairman Waterhouse to be convinced of the far-reaching possibilities of the plan and the significant suggestion it holds toward a better organization and direction of other phases of the world's engineering energy. Other industries might well take similar measures to plan and stimulate their research.

M. I. T. Photo

NEW AND GREATER MECHANICAL CEREBRUM FOR THE INTEGRAPH, "THINKING MACHINE," DEVELOPED BY VANNEVAR BUSH IN THE INSTITUTE'S DEPARTMENT OF ELECTRICAL ENGINEERING



PLACING POWER UNIT IN NEW CANADIAN NATIONAL OIL-ELECTRIC LOCOMOTIVE NO. 9000 THAT SHOWS MARKED EFFICIENCY OVER STEAM LOCOMOTIVES

Konel

A TIMELY EXAMPLE of what the iron alloys committee hopes to stimulate in its field is at hand in the form of an announcement of the non-ferrous alloy, Konel, produced by E. F. Lowry of the Westinghouse Company.

Konel, an alloy of cobalt, nickel, and ferrotitanium, is harder than steel, and retains its strength at high temperatures. The presence of cobalt in Konel is of special interest because the use of this metal has hitherto been limited chiefly to the ceramics industry. Under the blow of a test hammer which would crush steel the new alloy when heated red hot shows no loss, according to reports, of those qualities found in the hardest metals when cold.

Already Konel is substituted for platinum in forming the heating elements of radio tubes and many other possible uses present themselves upon a moment's reflection. For instance, one of the stumbling blocks preventing the utilization of steam at extremely high temperatures is the lack of a metal which retains its strength at high temperatures and Konel may fill the bill. The recent interest in chromium-iron and chromium-nickel alloys has been inspired by the need for such an alloy in the construction of reduction furnaces lined with metal instead of firebrick.

Speeding Up the Solar System

CHICAGO folk are promised something still more strange than their politicians and criminals. Soon large audiences will be able to see a twenty-four hour astronomical day run off in four minutes. The motion of the outer planets through the stars and the movements of the sun and moon are to be completely visualized and comprehended by means of apparatus in the new planetarium which Max Adler, formerly of the Sears, Roebuck Company, has given to the city. He has provided $500,000 to build and equip a large domed building near the Field Museum and this structure, designed by Ernest A. Grunsfeld, Jr., '18, will be ready about next New Year's Day.

The construction of the building itself is fairly simple. In a circle beneath a dome seventy-five or eighty feet in diameter and lined with white cloth, are ranged chairs for the seating of the audience. There is also a desk with a bank of control buttons for the demonstrator, an electric pointer, and a runway for the projector.

The projector is a far more complicated affair and its design is the result of long scientific study by the Carl Zeiss Optical Works in Jena, Germany. The projector is a modified magic lantern, in the shape of a dumb bell, having a cylindrical central part and at either end hemispheres resembling diving helmets which contain powerful incandescent lamps. Set into these hemispheres in various positions are sixteen lenses which have behind them diaphragms bearing the right stars in the right places. Light projected through these lenses sends slender pencils of light to the dome's inner walls. The resulting effect is stars, planets, sun and moon, even the Milky Way, dotting a beautiful clear sky such as is seldom seen except from high mountains or on deserts. Careful precalculation has prevented the overlapping or blurring of images and the illusion of a real sky, it is promised, will be perfect. One helmet projects the northern hemisphere

Fairchild Aerial Surveys

CHANGING SKYLINE OF LOWER MANHATTAN

and the other the southern. The shift from one hemisphere to the other is accomplished by control buttons, which rotate the whole apparatus until the horizontal axis is parallel with the earth's axis.

As a small electric motor rotates the helmet in order to produce the movement of the stars, the planets are being projected from the cylindrical part of the projector by means of driving gears which are correctly speeded in relation to the movement of the stars. Smaller separate lenses encrusted on the helmets permit the projection of such planets as Mercury, Venus, Mars, and Jupiter, as well as various nebulae, the Milky Way, and the sun and moon. There are, in all, 119 optical lenses.

The possibilities of this projector are endless. By means of the control buttons the demonstrator may show a diurnal movement in the heavens or an annual movement, at such a speed as to make the action easily understood by the onlooker. Moreover the heavens may be considered from any geographical location desired. It will be just as simple to see how the heavens look from Buenos Aires as from Chicago. One need no longer travel to see the Southern Cross, for manipulation of various buttons brings its counterpart before one's eyes.

Even more spectacular is the possibility of speeding up time so that the heavens may be viewed as they were thousands of years ago or as they will be thousands of years hence. A little motor with a gyroscopic motion brings about a precession of the equinoxes so that, when it is speeded up, we may pass over 26,000 years of astronomical time in about four minutes. The changes that take place in the heavens are the more startling when one realizes that in 14,000 years Vega will replace the present Pole Star and the Southern Cross will be visible from any point in the United States. Eternal day may be demonstrated by slowing down the earth's revolutions to one a year, thus dispensing with sunrise or sunset. Eternal night may also be produced.

Philadelphia is the only other American city which has plans for a planetarium to be constructed in another year. Samuel S. Fels has presented one to the new Science Museum of its Franklin Institute. Europe, the place of the perfection of the planetarium, is more fortunate. Fifteen German cities, Vienna, Rome, and Moscow are now giving nightly performances to thousands of visitors who are entertained as they are instructed.

Traffic Cure?

SEGREGATION of the cities' most congested business district, surrounding it with a wide thoroughfare and providing thereon adequate parking garages for autos, and operating shuttle buses on the streets within the segregated area are the elements of an urban planning panacea proposed by two writers, V. R. Stirling and R. H. Toll, in *The National Municipal Review*. Like all palliations of the traffic problem their thesis is predicated upon the outlay of much money and, casually at least, it appears well nigh fantastic in conception. Though enhanced property values might in time balance the investment, the apportionment of the original expenditures would be quite difficult. But their plan, they claim, would cure present troubles instead of temporarily relieving them.

Up till now most city planning has taken the forms of widening and multiplying streets and building them above and below each other. These frenzied efforts, Messrs. Stirling and Toll admit, may alleviate congestion but they do not constitute its solution. They reason that the modern city is essentially a meeting place, not for public worship or for common defense as in earlier times, but for the transaction of the affairs of life. Today cities all have a downtown area used as a meeting place during the hours of business and "every day a wild scramble ensues to get into this section and get out of it."

Their idea would be to preserve the downtown section's importance as a meeting place and minimize its position as a way station. All unnecessary motor traffic would, therefore, be excluded from downtown during business hours for "vehicles have no utility in a place of meeting" and around the restricted section would be constructed a wide belt avenue, and traffic from one part of the city to another would detour by it. On this avenue would be erected ample parking garages for people having business in the downtown area; under it would be pedestrian tunnels, for on this avenue a pedestrian would be as out of place as in a busy railroad yard.

Free buses and floats which would convey passengers from the avenue into and about the restricted area, would be substitutes for moving sidewalks and "in one sense an extension of the building elevators. No one dreams of charging admission to the elevators of an office building. . . . The floats in the street should be considered in the same light." Street cars should be left alone but turns in the downtown section should be eliminated. Motor vehicles of firms within the area whose services were vitally necessary might be allowed but their use should be strictly limited. All freight movement and heavy trucking should be postponed until after business hours.

Such a plan would, in effect, increase the width of downtown streets by twelve feet through the prohibition of parking and "traffic . . . would move freely and expeditiously on account of the substitution of system instead of the haphazard, street-jamming lack of system now prevailing. Conveyances being operated by trained, responsible persons whose jobs would depend on their efficiency and street crossing by pedestrians being eliminated [through the provision of downtown pedestrian tunnels] travel would be quite safe. . . ."

Be this plan as it may, it represents the serious thought that is being given one of America's most acute problems. In an article on skyscraper design to appear in a forthcoming issue of The Review, Thomas E. Tallmadge, '98, emphasizes the necessity of some solution. And now comes word that, belatedly, an American university has recognized the need and established a major course in city planning. Engineering institutions could appropriately and even successfully attend to the matter and the Institute in 1927 established its Division of Municipal Cooperation and Research to assist cities not alone in their traffic problems, but in their economic ones as well.

The trouble with American city planning, as the astute Lewis Mumford has pointed out, is not lack of planning, but habitual bad planning. For years New York has been systematically botched and not until recently have intelligent developments such as Radburn, N. J., been attempted. Herein lies great opportunity for educational institutions and private consultants to contribute further research and thought toward saner urban rearrangements.

English Channel Bore

MORE than a generation ago digging began for a tunnel under the Straits of Dover and, when work stopped about 1900, one-tenth, partly on the English side and partly on the French, was finished. For thirty-odd years the controversy has raged over whether it is safe to complete the job. Meanwhile the duly chartered Channel Tunnel Company has met annually, exchanged sighs and hopes, and parted with a brave determination to carry on.

Although two British Governments have endorsed the scheme, and again and again it has been before Parliament, with favor and with disfavor, sometimes almost with accomplishment, hitherto it has always met rejection in the end. The present outlook is, however, more hopeful. A non-partisan committee appointed last spring by the Baldwin Government, is expected to report favorably on it during the next Parliamentary session. As the Labor Party has been long known to be in favor of the tunnel which would give employment to 12,000 men for four years, there seems reason to hope for approval this time. If so, quick action may be expected, for the Channel Tunnel Company has had the plans on hand for some time and is confident it also has the financial backing, contingent upon Governmental consent to proceed.

Construction cost is figured at $150,000,000 with $25,000,000 extra for drainage. The Channel Tunnel Company estimates 4,000,000 passengers would be carried annually with a fare of $4, to yield $16,000,000, and that freight would bring in at least $4,000,000 more. Operating expenses would total $5,000,000, leaving $15,000,000 a year profit.

The tunnel would be approximately twenty-four miles long with a cut and covered gradient of an extra three and a half miles at either end. There would be two tubes with connecting cross-over tubes for repairs and other work at intervals of about a mile. The whole of the sea-bed from Calais to Dover consists of a solid belt of blue gault approximately ten miles wide and 190 feet deep, the existence of which was established in the early Eighties by the French who made more than 8,000 borings. Blue gault, impervious to water, is said to be the ideal geological formation for the construction of a submarine tunnel and the bore going through this material at a depth of 135 feet would give ample security against flooding of the tunnel from above or damage by a depth charge exploded on the sea-floor overhead.

Lord Sydenham, as a stout protagonist of the Channel tunnel for nearly fifty years, points out that in case of war:

1. That the defense of the Channel ports with a tunnel behind them would have been vastly strengthened.

2. That the bombing of "a zone round the English entrance" would not in the slightest degree interfere with the blocking by sea water or the destruction of the tunnel.

Golden Jubilee

OCTOBER 21 marked the culmination of an open-season period for the publication and republication of Edisonia for on that day was celebrated the fiftieth birthday of the electric light. President Hoover journeyed to Dearborn and there, at Henry Ford's new Edison Institute of Technology, saw the inventor reenact the experiment which led to the discovery of the incandescent bulb's principles. And, in response to a signal from Mr. Edison, the "electrical galaxies on White Ways from Squeedunk to Broadway," including the lights of the Institute buildings were dimmed. What more fitting notice could have been paid to such a jubilee?

When Mr. Edison perfected the light he was but thirty-five, now he is past eighty. The plenitude of his accomplishment during the intervening period makes important his present ideas on the relationship of age and potential ability. He says:

"The man who has reached the age of thirty-six is just about ready to discard the illusions built upon false theories, for which wrong instruction and usually ignorance have made him an easy mark.

"At thirty-six he is just beginning to get down to business. If he is really worthwhile he has passed through a period of hard knocks by that time. The useful man never leads the easy, sheltered, knockless, unshocked life. At thirty-six he ought to be prepared to meet with realities, and after that period in his life, until he is sixty, he should be able to handle them with steadily increasing efficiency.

"Subsequently, if he has not injured his body by unhealthy living, he may very rightly continue to be increasingly efficient up to his eightieth birthday, and in exceptional cases until ninety. . . ."

To this we add, speaking of Mr. Edison, in the words of an old refrain, "We hope he lives to be a hundred . . . and then a hundred more. . . ."

Mineral Industry Needs Men

OF all industries, none is more acutely in need of competent engineers than mining and metallurgy. A swing about the country touching the mineral centers yields much data to support this statement. Metals, particularly the non-ferrous ones, are demanded in ever increasing quantities, necessitating higher extraction, better refining, and new methods of working poor mines.

To accomplish these improvements requires the engineering ingenuity that is so noticeably scarce, and consequently we find smelting centers such as Salt Lake City dangerously close to the red side of the ledger. Even where cheap natural gas is available as at Amarillo, the metropolis of the Texas Panhandle, the profits of the zinc smelters at present prices are small or non-existent.

In the main the trouble lies in the failure of the mining industries to ensure themselves a flow of replacement personnel for their present technical staffs in contrast to the ever-widening opportunities they afford. Other large corporations, by training courses, coöperative arrangements, and well-conceived plans for assisting the progress of technical graduates in their employ have attracted to their organizations the cream of the June crops of fresh-laid graduates.

Lacking such encouragement on the part of the minerals industries, registration in mining and metallurgy at Technology is but half what it was in 1920 and less than half its peak about 1907. This year it is but sixty-six, including graduate students and freshmen. Nor is this experience of a falling student interest in mining and metallurgy uncommon for it is that of most other schools.

Most forward-looking, therefore, seems the plan of the American Smelting and Refining and United States Smelting, Refining and Mining Companies which have undertaken to give summer employment to Technology metallurgical students, paying their traveling expenses to and from a western smelter and $100 per month besides. This was instituted last summer with the former company under the general supervision of Professor Carle R. Hayward, '04, who was invited to visit certain of the typical plants to meet the management, and observe operations and living conditions. While the employment of but one or two men by such large companies may not seem such a large contract in itself, it is a beginning and ought to furnish a stimulation which has been sorely lacking.

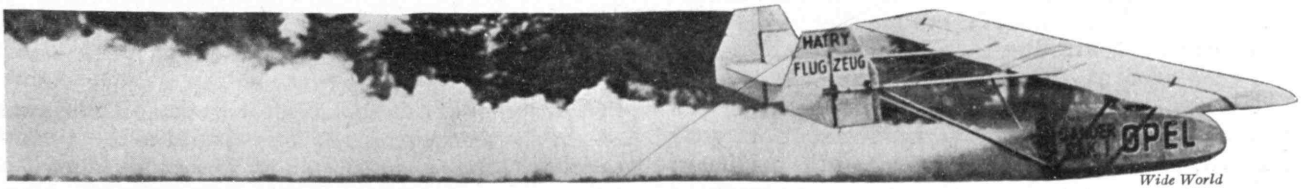
An example of the type of engineering of which more is needed and which the above arrangement should uncover is furnished by the remarkable planning observable in certain plants, particularly one in Inspiration, Ariz. Estimates for the cost of a plant to leach 9,000 tons of copper ore were made, the plant to cost about six million dollars. Upon completion the estimate was found to be only $15,000 off.

Increase and Diffusion

IN 1826, James Smithson, Oxford graduate of 1796, sat down to write his will. Two years later he died and it transpired he had left his entire fortune to the United States of America to found at Washington "an establishment for the increase and diffusion of knowledge among men." During three-quarters of a century (the first Board of Regents was appointed in 1846) the Smithsonian Institution—the gift of an Englishman to a country he had never seen—has been a meeting place of men of science. Its library of 700,000 volumes and its valuable collections of specimens, brought back by exploring parties from remote places, have made it the haunt of eminent scholars; its publications have "diffused knowledge" to the four quarters of the globe.

Since 1926, its Secretary has been Dr. Charles G. Abbot, '94, famed authority on the sun, for over thirty years Director of the Smithsonian's Astrophysical Laboratory and sometime contributor to The Review. His annual report sets forth the fact that, during the fiscal year ending July 1, the world contributed nearly a million specimens to the collections of the Smithsonian.

Twenty-seven expeditions went out to five continents in quest of knowledge. For the third consecutive year the study of Alaskan archaeology was continued with the hope not only of unravelling the past of the Eskimo, but also the route by which man came to North America.



Wide World

FIRST FLIGHT OF VON OPEL ROCKET PLANE IN GERMANY

BOOKS

We Modern Frankensteins

MEN AND MACHINES, by Stuart Chase, '10. $2.50. 354 pages. New York: *The Macmillan Company*.

IF Samuel Butler, when he first published his "Darwin Among the Machines" in the year 1863, could have foreseen the machines and inventions of the following sixty-six years, it is possible that he might have altered his opinion — or hope — that though "they (the machines) will rule us with a rod of iron, . . . they will not eat us." If he could have read, in a vision, the first four pages of "Men and Machines" in which the author describes his daily slavery, Butler would have seen the fulfillment of his prophecy that man would become "an affectionate machine-tickling aphid." The author, indeed, says he does "not feel like a slave." He does not recognize his parasitism, but were all the machines of his daily routine removed, he would be as helpless as an Aphis flicked from its rose leaf.

It may be true as the author says that man, with enough machines (so defined as to include all mechanisms and tools) would find his "biological limitations . . . banished," but he would as surely find his biological powers atrophied. Whereas thirty years ago he may have paddled a canoe at two miles per hour over a distance of six miles singing "Jolly Boating Weather" the while, today he travels in a motor boat at twenty miles per hour for fifty miles to the strains of a phonograph syncopating jazz.

After an introductory chapter in which, by quotations both from the prosecution and the defence in the case of man *vs.* the machine, he lays the case before his jury, the reader, and a second chapter in which he analyzes and defines a machine, the author proceeds, from Chapter III to Chapter XVII, to give, with statistics, an interesting and illuminating history of machines and their social and economic consequences from ancient times to the present era of *power* machinery. Then, in Chapter XVIII, *The Balance Sheet*, he gives a summation of the good effects, the evil effects, and the effects mixed of good and evil of power production.

The summation is fairly complete, but is, as the author remarks, "a personal appraisal," and in the reviewer's opinion will satisfy no one. He makes, for instance, the statement, frequently heard, that "cruelty as a social phenomenon has undoubtedly decreased in the last century." This at a time when labor organizers in power industries are stripped and beaten, and women strikers shot, seems at least open to question. And to say that "superstitition is declining" as a consequence of familiarity with the machine, rings false in a land of Scopes trials, anti-evolution laws, adherents of the flat-world theory, and believers in the impending end of things.

There is a list of ten "effects manifestly good" and seventeen "manifestly evil," with thirteen "both good and evil;" the last a doleful list which in the opinion of most persons, it is to be feared, would go to swell the hosts of evil. Even by the author's own criterion of "collected figures and facts" the evil would seem to outweigh the good.

The author, however, does not think so. He does not believe in "the doctrine of man as the slave of mechanization. Rather engines have been enslaved by man." But both of these statements are true, and the author seems to miss or evade the point. Power machines, with the large investments and enormous capital they imply, have been enslaved by one small group of men, while a vastly larger number of men have been enslaved by this mechanization.

This condition is not inherent in power production, nor is power machinery inherently evil. In the last analysis man is never enslaved by *things* which he has made but by other men or by himself. The trouble with the machine lies not in its labor saving, in its energy, replacing and multiplying the energy of the human frame, but in the misdirection of that energy. If the vast potential energy of the machinery of the world — not the tools which man handles, but the machines which he controls — could be directed to the production and distribution for use, of the things which man needs; those things necessary for his comfortable life; then man might be called not the slave but the master of the machine. For a few hours a day or a few hours a week man would say to the machine, "Work!" And then, "Stop! we have enough. The rest of our time we will give to living."

Instead of which the machine grinds on relentlessly, day shift and night shift, producing and producing, not that which man wants but that which the "machine" says he must have; more of the old, or else some new thing, most often superfluous; often foolish and trivial. For the most distressing feature of power production is the loss of a sense of values. The inventor, the technician, the scientist think, because a thing *can* be done, it is worth doing. As the author says, quoting from the secretary of the Bureau of Standards, "Man's miracles multiply . . . to give him . . . new and limitless power." To which it seems appropriate to reply: powers to do — what?

The reader will find himself agreeing with the author and disagreeing, which is evidence that "Men and Machines" is an impartial and thought-provoking work. The book is illustrated, well printed and attractively bound.

L. MAGRUDER PASSANO

Dopes and Doses of Old

THE MYSTERY AND ART OF THE APOTHECARY, by C. J. S. Thompson. $4.00. viii+287 pages. Philadelphia: *J. B. Lippincott Company*.

THE author of this book evidently takes his title from the charter which King James granted to the apothecaries in 1617, a charter which formed them into a company or guild separate from the grocers, with a Mas-

ter and Wardens, under the name of the Society of the Art and Mystery of the Apothecaries of the City of London. The charter gave them the exclusive privilege of keeping apothecary shops and made it unlawful for grocers, or any others who were not apothecaries, "to make or sell, to compound, prepare, give, apply or administer any medicines or medicinable compositions, viz., Distilled Waters, Compounds or Olea Chimica, Apozemata, Sirrups, Concerves, Eclegmata, Electuraria, Condita, Medicinalia, Pillulas, Pulveres, Troches, Olea, Unguenta, Emplastra, or by any other way to use or exercise the Art, Faculty, or Mystery of an Apothecary or any part thereof, within the City of London and the Suburbs or within seven miles of the City."

The art of the apothecary is very ancient and had its origin in preparation of natural substances for the treatment of disease and injury. The various chapters describe the drugs and medicines which were used by the Babylonians, Assyrians, Egyptians, Greeks, Romans, and Arabians: the oldest remedies in the world, "holy bitter," *terra sigillata*, and theriac or treacle, the medicinal preparations of the Middle Ages and the Renaissance, many of which are exceedingly weird. He describes the procedure of the apothecary, his books, his shop, his weights, his carboys, his symbols, his fees, his services to kings and the nobility, the evolution of the apothecaries as a separate guild — it would almost be proper to say as a separate cult — from that of the grocers and spicers, and the distinction of their art and theories from those of the chemists and medical men.

The book is full of curious facts. It seems, for example, that Sir Walter Raleigh bought marmalade from his apothecary while he was imprisoned in the Tower. The magic powers which were ascribed to the apothecary's goods are but evidences of human credulity and of the hope which springs eternal in the human breast. Let us not scoff at them, for credulity also eternally flourishes. If there is no universal panacea, if treacle does not cure all ailments from gout to intermittent fever and depression of the spirits, there is still much hope. We may buy a tooth paste the use of which will bring us new friends, and make us handsome and charming and successful with the ladies. Fifteen minutes a day will cure us of stuttering, give force to the personality, and make us intelligent after the model of Lincoln or Garfield. Magic is by no means dead, and there is little of human nature that is new under the sun. It is interesting to read of the old beliefs and practices. Most people will find it difficult to lay down the book before they have finished it.

TENNEY L. DAVIS, '13

Aeronautics Sugar-Coated

LINDBERGH FLIES ON! by Earl Reeves. $2.00. 292 pages. New York: *Robert M. McBride and Company*.

DESPITE its title, this volume is not merely one more glorification of Charles Augustus Lindbergh's flight across the Atlantic Ocean. Rather, after one introductory chapter which is a *rechauffée* of this somewhat over-written journey, the book becomes a fast running history of contemporaneous achievement in making out of the "strange contraption" of the Wright brothers a real engine of progress in transportation and exploration.

In the catalog of the publisher the work is listed as a "juvenile." Most of the chapters originally appeared in *The Youth's Companion* in the recent colorful sunset of its history. Notwithstanding, the adult reader, and even the technically minded one, should find much to interest him: a considerable mine of interesting incident connected with such achievements as the creation of the Transcontinental Air Transport lines; the surveying and establishment of air routes through the Latin and South American countries; the manufacturing and production achievements of men like Grover Loening, Anthony Fokker, and Sherman Fairchild.

The style is racy and journalistic. In the main the author tells his story through the medium of interviews with the personalities which are so intimately bound up with modern aeronautical history. Mr. Reeves has had excellent assistance in the preparation of his book. Two chapters stand out: one a healthily critical indictment of recent progress in aviation by Grover Loening who insists that in many ways aviation has retrogressed since the days of the Wright brothers; another, the final chapter of the book written by Eric F. Hodgins, '22, formerly Managing Editor of The Review and Editor of *The Youth's Companion*, who, in a style of unusual fluency, tells the story of Commander Byrd, his flights over the North Pole and across the Atlantic, and his attempt, still in progress, to answer the icy challenge of the Antarctic Continent.

The chronology of aviation which closes the book is, in spite of a few minor errors, a condensed record of great value and a marked help in settling those disputes, already constantly arising, about what the endurance record was in the far-off days of 1927, or just when Amelia Earhart was spirited across the Atlantic.

C. C. C.

Painter-Naturalist

AUDACIOUS AUDUBON, by Edward A. Muschamp. $3.50. 312 pages. New York: *Brentano's*.

JOHN BURROUGHS wrote in his biography, "John James Audubon," that "we have had better trained and more scientific ornithologists since his day, but none with his abandon and poetic fervour in the study of birds. . . . He was not in the first instance a man of science like Cuvier, or Agassiz, or Darwin — a man seeking exact knowledge; but he was an artist and a backwoodsman seeking adventure, seeking the gratification of his tastes and to put on record his love of the birds."

The lately renewed interest in the famous naturalist has not brought forth any new data that would invalidate Burroughs's estimate. The reviewer has recently seen on exhibition in a print gallery in Boston more than three hundred rare Audubon prints, ranging in price from five to three hundred dollars. To see them all together was a rich experience. "Gold-Winged Woodpecker," "Louisiana Water Thrush," "Ruby-Throated Humming Bird," "Labrador Falcon" — fitting titles for the magnificent drawings to which the "American Woodsman" imparted such a unique aliveness. There may be in some of them exaggeration in coloring, in others over-dramatization of the imagined feelings of the birds, but the large majority of them furnish ample proof of Burroughs's appraisal.

(Continued on page 54)

THE INSTITUTE GAZETTE

New Dean

WELCOME NEWS disseminates rapidly and by now The Review Staff can do little more than restate the fact and acclaim its Chief. For Harold E. Lobdell, '17, Editor of The Review, is now Technology's Dean of Undergraduate Students. The announcement of his appointment, coming happily close to the tenth anniversary of his affiliation with the Institute, was confirmed by the Corporation on October 9.

Dean Lobdell is the third to hold the office since its creation in 1902. Alfred E. Burton, the first, was Dean until his retirement from the Institute in 1921, and Dr. Henry P. Talbot, '85, from then until his death in June, 1927. The new incumbent's first affiliation with the office came in 1921 when he was appointed Assistant Dean. He assumed the Editorship of The Review one year later, and during the interregnum between Dr. Talbot's death and October 9, he carried on the work of the Dean's office, *sans titre*.

Other Appointments

VICTOR M. CUTTER, President of the United Fruit Company, was elected a Life Member of the Corporation at the meeting that confirmed the appointment of the new Dean. He has been for a number of years a member of the Advisory Committee on the Institute's Course in Engineering Administration, and last year he delivered one of the Aldred Lectures. Mr. Cutter is also President of the Revere Sugar Refining Company and of the Tropical Radio Telegraph Company, and a director of the New England Telephone and Telegraph Company, the International General Electric Company, Elders and Fyffes, Ltd. of London; and the Fruit Dispatch Company and the New England Mutual Life Insurance Company.

The appointment of Professor William P. Ryan, '18, as Head of the Department of Chemical Engineering was also confirmed by the Corporation. Professor Ryan succeeds Dr. Warren K. Lewis, '05, as Head of the Department, Dr. Lewis desiring to be relieved of his administrative duties to devote more time to teaching and research work in the Department.

Professor Ryan served in the Army in the Chemical Warfare Service for several years and after joining the Institute staff was stationed at the Bangor Station of the School of Chemical Engineering Practice from 1920 to 1922. For the following year he was at the Boston Station, and later was in charge of the Buffalo Station at the Lackawanna plant of the Bethlehem Steel Company. He has been Associate Professor of Chemical Engineering Practice and Director of the School of Chemical Engineering Practice since 1927.

HAROLD E. LOBDELL, '17, NEW DEAN OF UNDERGRADUATES, WHOSE APPOINTMENT WAS CONFIRMED OCTOBER 9

Other appointments were: George Rutledge to the rank of Associate Professor of Mathematics, and Edward P. Warner, '17, formerly Head of the Department of Aeronautical Engineering, and Assistant Secretary of the Navy, who resigned to become Editor of *Aviation*, to be Non-Resident Professor of Aeronautical Engineering. Otto C. Koppen, '24, and Richard H. Smith, '18, become Associate Professors of Aeronautical Engineering, and J. S. Newell, '19, formerly of the Department of Civil and Sanitary Engineering, becomes Assistant Professor of Aeronautical Structural Engineering.

The following were promoted to the grade of Assistant Professor: M. J. Buerger, '25, Mineralogy; J. L. Entwistle, '21, Electrical Engineering; Glennon Gilboy, '25, Foundation Engineering; and H. C. Willett, Meteorology. Other appointments are W. P. Fiske, Assistant Professor of Accounting, and Richard A. Wilkins, '18, Assistant Professor of Chemical Engineering.

Registration

FOR THE THIRD successive year the registration has increased. As of the third day of this academic year there was a total of 3,037 students as compared with 2,818 in 1928–1929 and 2,672 in 1927–1928. This year's gain of 219 is an increase of 7.8 per cent over last year.

The Freshman Class of 1933 numbers 702; there are 644 sophomores, 614 juniors, 576 seniors, 84 unclassified students and 417 graduate students.

Chemical Engineering shows the greatest gain over 1928–29 with 69 more students in the Department; Aeronautical Engineering is second with a gain of 54; Mechanical Engineering third with 25 more; Biology and Public Health fourth with 24 more; Physics fifth with 21 more.

Electrical Engineering is still the largest of the Institute's Courses, although showing a drop of 29 to 482.

Chemical Engineering, with 383, is second. Mechanical Engineering retains third position with 301, but Engineering Administration, which now has 289, is fourth this year instead of second as in 1928–1929. Aeronautical Engineering with 278 is now fifth.

The Counting Room

DURING FISCAL 1929, which ended June 30 last, the Institute's net operating income exceeded, for the fourth consecutive year, the two million mark, according to the Report of the Treasurer, Everett Morss, '85, presented to the Corporation on October 9. Capital gifts during the year totaled $687,549 and miscellaneous gifts, $85,354. Included in the former were: $191,000 additional from the estate of Henry Clay Frick (the Frick Fund, with this addition, totals $743,000), $108,344 Alumni Dormitory Fund payments, $85,000 from Alfred P. Sloan, '95, and Henry M. Crane, '95, for the new Aero Engine Laboratory. Through purchase during the year the land holdings west of Massachusetts Avenue were increased by 200,000 feet.

Gross expense for fiscal 1929 exceeded gross income by $558,000 but net income exceeded net expense by $3,000. Special appropriation of funds accounted for the extra gross expense. Income from students was $1,175,107 or $277,845 more than in fiscal 1928, largely due to the increased tuition fee which went into effect for the first time during fiscal 1929.

The net operating expense during fiscal 1929 was at the rate of $7,150 per day (not including $3,340 per day for research and special payments) as against $6,300, $6,200, $6,000, and $5,444 in the four previous years. Academic expenses increased $81,000 or 5.5 per cent over fiscal 1928; administration costs increased $13,000 or 4.9 per cent; plant operation and maintenance increased $8,000 or 1.9 per cent; miscellaneous expenses increased $68,000 or 59.2 per cent.

The report shows that the Institute's total investments have a book value of $30,093,763.35 and "about 23 per cent of the total is invested in stocks with the result that the market value considerably exceeds the book value.

"Due to special circumstances, the Eastman Contract and the H. C. Frick Funds, amounting to about $10,000,000 are separately invested. There are seven other funds totaling about $8,000,000 which, owing to the terms of gift, have to be invested separately. The provision for separate investment of these funds is detrimental to them, both from the standpoint of security and of income.

"The other 150 Funds are consolidated into our General Investment Account, which has a book value of about $18,500,000. The income for the year on this account was 5.69 per cent, of which 5.5 per cent was allocated as the income of each fund. The balance was allocated to Endowment Reserve, which now exceeds $635,000."

FISCAL 1929 marks the close of the decade during which the Educational Endowment Fund, the further benefactions of Mr. Eastman, the bequests of Mr. Frick, Mr. Foster, and of others, were added to the Institute's financial resources. In an era of rising costs of labor and materials, fiscal 1919 saw Technology at the close of the World War faced with the need for the immediate enlargement of its plant, the added burden of educating a student body half again as large as in 1916–1917, the impending loss of the $100,000 annual subsidy from the Commonwealth, and the enforced severing of the relations with Harvard of which so much had been hoped.

The precise steps by which the Institute emerged from the seeming indigency of fiscal 1919 to the comparative affluence of fiscal 1929 are shown in the successive annual reports of the Treasurer. Conditions then as compared with the present are illustrated by the following comparisons of certain items in the reports for 1919 and 1929:

(000's and cents omitted)

	Fiscal 1919	*Fiscal 1929*	*Percentage Increase*
Income			
From Students	$587	$1,175	100%
From Investments	429	1,673	290
From Commonwealth of Massachusetts	100	none	100
Expense			
Salaries of Teachers	437	1,235	182
Total Academic Expense	522	1,526	192
Administration Costs	157	275	75
Plant Operation and Maintenance	276	416	51
Capital Account			
Book Value Educational Plant	10,493	13,883	32
Total Funds	9,533	30,093	216

De Mortuis

SINCE THE LAST ISSUE of The Review in July three men long prominent and active in Institute and Alumni affairs have died. Henry F. Bryant, '87, passed away on June 19. As chairman of the Dormitory Fund Committee he saw, not long before his death, the completion of the Association's efforts to give the Institute more dormitories, and in addition his final work on the committee to draw up a new plan for electing Term Members on the Corporation had won the approval of the Council. These items of accomplishment are but examples of Mr. Bryant's unflagging interest in the Council of which he had been a member since its formation. For two years beginning in 1926 he was a Vice-President of the Association.

WALTER B. SNOW, '82, who died on August 9, at Falmouth, Mass., was one of the several men who had the most to do with the creation and development of the Alumni Association and its affiliated activities. He conceived the idea of an Association of Class Secretaries, and upon its formation became Secretary, holding that office for six years. In that position he was active in the establishment of The Review and with the setting up of the principal features of the Association as it now exists. From 1903 to 1906 he was Vice-President of the Association and in 1908–1909 President.

This exceptional and fruitful work started during Mr.

Fairchild Aerial Surveys

THE "MAYFLOWER" IN FLIGHT OVER NEW YORK. THE GOODYEAR-ZEPPELIN CORPORATION HAS LENT IT TO THE INSTITUTE FOR RESEARCH

Snow's undergraduate days when, as a member of the first Managing Board of *The Tech*, he was instrumental in giving that publication form and substance.

Professionally Mr. Snow had an equally formative influence upon the enterprises he started or participated in. He organized the still important advertising agency, Walter B. Snow and Staff, Inc., was President of the Reversible Collar Company, Secretary of the Massachusetts Committee for the Blind, and a member of numerous professional societies. Prior to his business career he was for two years an Assistant in the Institute's Department of Mechanical Engineering and for twenty-two years an engineer with the B. F. Sturtevant Company. He was the author of "Mechanical Draft" (1898), and "Steam Boiler Practice" (1899).

EDWARD W. ROLLINS, '71, who died on October 6 at his home "Three Rivers" at Dover, N. H., had become to Technology men everywhere a symbol of hospitality and fellowship. Every June for nearly a score of years he has entertained at his estate The Technology Club of New Hampshire, of which he was President. Attendance was, however, never limited to New Hampshire Alumni. Most of the Institute's staff and other Alumni from all over New England were annually invited to "Dad" Rollins's feast. It had grown to be more than a Sunday holiday and dinner; it was a Technology institution.

Mr. Rollins had a notable career in engineering finance. He conceived and started the firm of E. H. Rollins and Sons, investment bankers, named after his father, Senator Rollins, and until his death he was Chairman of its Board of Directors. In 1881 he helped start the Denver Electric Light Company and became its President. He was engineer for the Colorado Central Railroad, and subsequently he became a director of the Public Service Company of Colorado, the Cities Service, British Columbia Fishing and Packing, and Southern California Edison Companies.

Busy Summer

DURING the summer much went on at the Institute. The Department of Electrical Engineering held a colloquium on power circuit analysis. In the Department of Chemical Engineering, Dr. Ernst A. Hauser, internationally known for his researches in colloids, presented a series of lectures on applied colloid chemistry. The third annual Public Health Institute, directed by the Department of Biology and Public Health and the Metropolitan Life Insurance Company, was held at the Institute in June and early July.

ADVERSARIA

Honoris Causa

FOR ACHIEVEMENT three recent academic distinctions have been conferred:

¶ On ARTHUR D. LITTLE, '85, by the University of Manchester, England, the honorary degree of Doctor of Science and honorary associateship of the Manchester College of Technology. Dr. Little is a Life Member of the Institute's Corporation and, in 1921–22 was President of the Alumni Association. Previous honors, which include the Presidency of the American Chemical Society as well as the honorary Doctorate of the University of Pittsburgh, attest his numerous scientific accomplishments. The current awards were incident to his retirement from the Presidency of the Society of Chemical Industry of Great Britain.

¶ On PROFESSOR JAMES FLACK NORRIS, Director of the Institute's Research Laboratory of Organic Chemistry and (in 1925 and 1926) President of the American Chemical Society, the Honorary Doctorate of Science of Bowdoin College.

¶ On COMMANDER EDWARD ELLSBERG, U. S. N. R., S.M. '20, the man who raised the submarine *S-51* and last spring wrote "On the Bottom," the honorary degree of Doctor of Engineering by the University of Colorado.

¶ On DR. GEORGE L. SWAIN, '77, Honorary Membership in the American Society of Civil Engineers for his work in Civil Engineering. From 1881 to 1909 and from 1914 to 1919 he was on the Faculty of the Institute's Department of Civil Engineering.

Honora Militaria

Decorations came to two alumni during the summer:

¶ To BRIGADIER GENERAL LOGAN FELAND, '92, of the United States Marine Corps, the Distinguished Service Medal star for "exceptionally meritorious service" as Commanding General of the Second Brigade of Marines in Nicaragua from February, 1928, to March, 1929. In the World War General Feland commanded the 5th Marines of the 2d Division throughout four major offensives and received the Distinguished Service Cross, the Distinguished Service Medal, the Croix de Guerre with six citations, and the rank of Officer of the Legion of Honor.

¶ To LT. JAMES H. DOOLITTLE, S.M., '24, who, in 1925, won the Jacques Schneider Trophy for seaplane racing and, more recently, was the first to fly over the Andes, the first to negotiate an outside loop and live, the first to cross the continent within an elapsed time of twenty-four hours; the Distinguished Flying Cross.

In addition, Lt. Doolittle receives the Oak Leaf Cluster for his achievements during March, 1924, when he performed a "series of acceleration tests requiring skill, initiative, endurance and courage of the highest type."

Appointments

In the Faculty there are to be one new Head of a Department who becomes concurrently a Professor, a new Dean of Undergraduates, one new Associate Professor, four new Assistant Professors. (See Page 36.)

Other current appointments are:

¶ PROFESSOR DUGALD C. JACKSON, Head of the Department of Electrical Engineering, to be Chairman of the American delegation to the World Engineering Congress at Tokio. (See Page 28.)

¶ EDWARD P. WARNER, '17, now Editor of *Aviation*, former Head of the Institute's Course in Aeronautical Engineering and Assistant Secretary of the Navy for Aeronautics, to the Presidency of the Society of Automotive Engineers.

¶ PHILIP STOCKTON, '99, since 1910 President of the Old Colony Trust Company, to be President of the newly merged First National Bank of Boston and the Old Colony Trust Company.

¶ OSCAR C. MERRILL, '05, resigned after nine years as Executive Secretary of the Federal Power Commission, to head the American section of the World Power Conference.

¶ KENNETH M. LANE, '17, to whom is credited the design of the Wright Apache plane in which Lt. Apollo Soucek, U. S. N., broke the world's seaplane altitude record, to head the aircraft engineering section of the Department of Commerce.

¶ CHARLES E. SMITH, '00, Vice-President of the New York, New Haven and Hartford Railroad, to head its department of purchases and stores.

¶ JOSEPH T. B. WOODRUFF, '17, to be chief engineer on a regional plan for a district about Philadelphia covering an approximate area of 3,600 square miles. It will extend as far north as Trenton, N. J., and as far south as Wilmington, Del.

¶ DEAN K. WORCESTER, '22, as Assistant Secretary of the New York Stock Exchange.

¶ CHARLES HAYDEN, '90, to be Chairman of the Board of the consolidation of the Adams Express Company, the Railway and Express Company and the Haygart Corporation into a $85,000,000 investment trust. Mr. Hayden, who was President of the Alumni Association in 1925–1926, is already a director in sixty-eight corporations.

¶ HENRY E. WORCESTER, '97, Vice-President of the Revere Sugar Refinery, to be Vice-President of the United Fruit Company.

Deaths

Since the last issue, reports have come to The Review of the decease of the following:

¶ EDWARD W. ROLLINS, '71, on October 6. He was the founder of the firm of E. H. Rollins and Sons, investment bankers. (See also Page 38.)

¶ WALTER B. SNOW, '82, on August 9. He organized the Walter B. Snow Associates Publicity Engineers which was later called Walter B. Snow and Staff, Inc. His unfailing interest and activity in all affairs concerning Technology make his death a great loss to the Institute. (See also page 37.)

¶ HENRY F. BRYANT, '87, on June 19. He was an active Alumnus, and an enthusiastic worker for the Dormitory Fund. (See also page 37.)

¶ GEORGE F. GOODNOW, '88, on April 9. As an executive and consulting engineer among numerous gas companies of the country he has been widely known.

¶ HENRY W. BLAKE, '88, on May 20. He was senior editor of the *Electric Railway Journal*, a magazine which reflected his engineering knowledge and cultural influence for thirty years.

¶ HENRY F. BIGELOW, '88, on August 12. Prominent in the architectural profession in Boston, he was noted for his interest in civic affairs and for his lovable personality. His enterprise as trustee of the Boston Museum of Fine Arts led to the construction of the new wing of decorative arts.

¶ EDWARD C. BURNHAM, '90, on October 4, 1928. Since his graduation from the Institute he had been with the Draper Company at Hopedale, Mass.

¶ JOHN B. BLOOD, '90, on February 28. He served in the war as Lieutenant Commander in the Navy. Later he was engaged in engineering in Washington.

¶ EDGAR V. SEELER, '90. He was an architect of prominence in Philadelphia, Penna.

¶ FREDERICK W. SWANTON, '90, Washington, D. C. He had been in the Patent Office since he left Technology.

¶ EDWARD ROBINSON, '90, on August 2, the result of an automobile accident in Maine. He was Head of the Department of Mechanical Engineering of the College of Engineering of the University of Vermont.

¶ JOHN R. STEVENSON, '92, on October 14, 1928.

¶ EMIL A. WALLBERG, '92, on April 1. His business interests in Canada included paper mills, power plants and munitions factories.

¶ CHARLES P. HOLLAND, '92, on June 5. At one time he was associated with Clemons and Peterson, a Brockton real estate firm.

¶ FREDERICK J. HOXIE, '92, on August 11. An interest in the effect of dry rot and fungi on timber resulted in numerous articles produced for scientific societies and magazines. He was one of the founders of the Phenix Electric Company and made many inventions in electrical appliances, chemistry, and agriculture that have been very successful.

¶ WALLACE C. BRACKETT, '95, on October 15. Formerly a resident of Boston connected with the Sanitas Manufacturing Company, he was in New York with the Charles G. Edwards Company for the last three years.

¶ LIONEL O. ROBERTSON, '96, on May 9. His long and successful career as an interior decorator was ended abruptly by his death on the *Berengaria* when he was returning from a business trip in Europe.

¶ ANDREW W. CRAWFORD, '96, on June 28. He was a prominent lawyer, actively associated with such civic affairs as parks, housing, and city planning. His death occurred suddenly on a golf course at Ardmore, Penna.

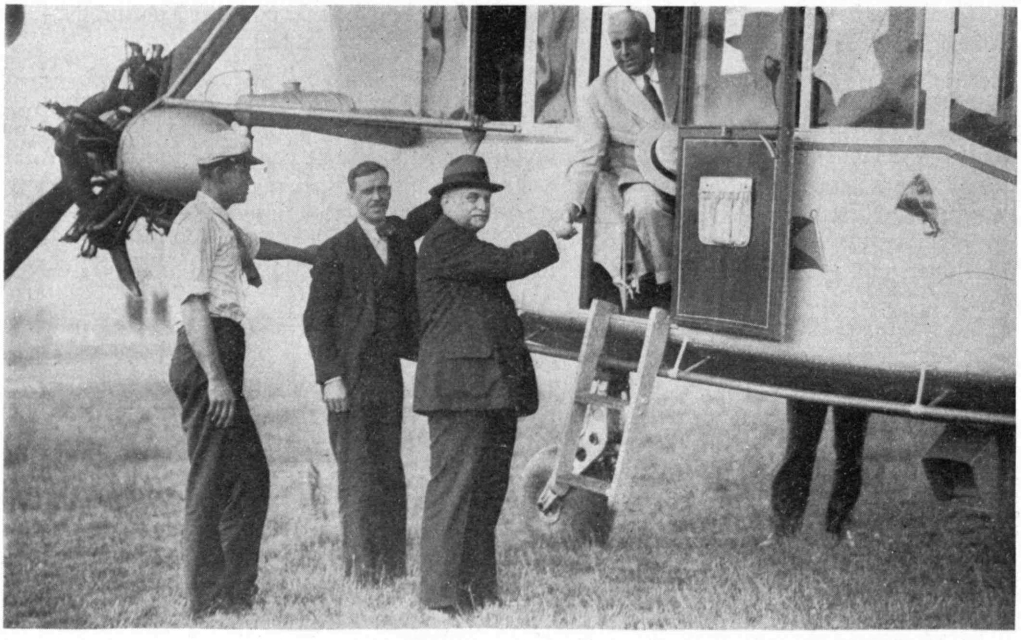
¶ HARRY W. BROWN, '96, on July 24. Three years ago he had retired from the General Electric Company with which he had been associated for more than thirty years.

¶ EDSON T. POLLARD, '02, on June 24. He organized and was President of the Pollard Manufacturing Company of Niagara Falls, N. Y. At one time he served as President of the Niagara Falls Technology Club.

¶ JOHN E. L. MONAGHAN, '06, on April 29. For many years he had been a district engineer in the sewer division of the Boston Public Works Department.

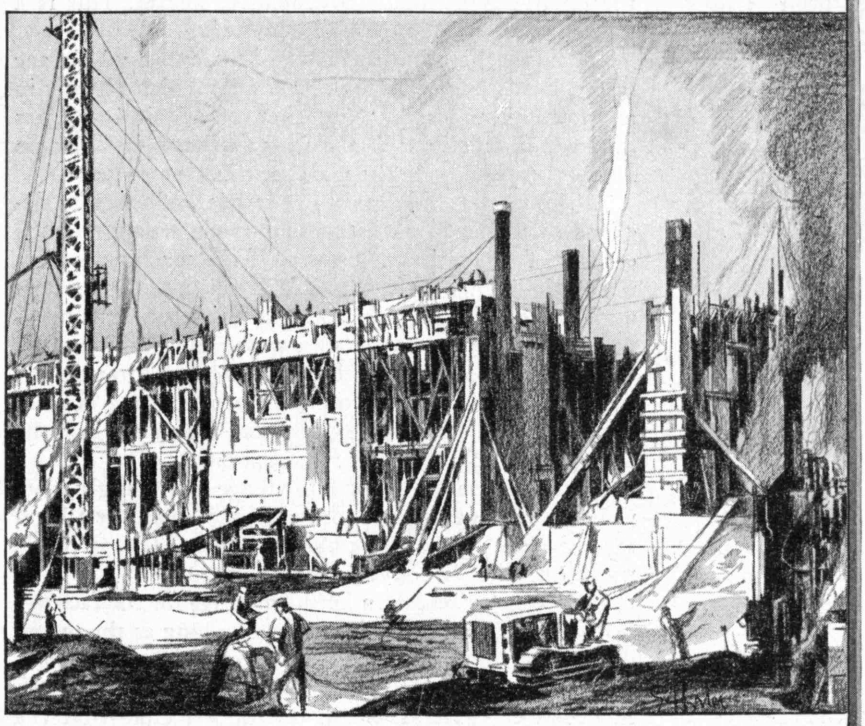
¶ HAROLD G. BRUNER, '13, on July 29. He had been factory manager for the Boston Woven Hose Company until ill health forced him to retire.

¶ PRINCE OF SONGKLA, '17, brother of His Majesty the King of Siam, heir presumptive to the throne of Siam, and of all the Dependencies, of the Laotions, of the Malays, of the Karens, and Descendant of the Great God Buddha; at Bangkok about October 1.



PAUL W. LITCHFIELD, '96, PRESIDENT OF THE GOODYEAR-ZEPPELIN CORPORATION AND OF THE ALUMNI ASSOCIATION ARRIVES, ABOARD THE "MAYFLOWER," ON INSTITUTE GROUNDS AND IS GREETED BY DR. STRATTON

More *and still more* telephones for tomorrow



Your voice starts new factories a-building

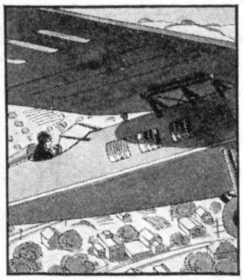
Day by day, the telephone becomes a more significant factor in social and business intercourse. As a means of communication on land and across the ocean, its use grows steadily and it is soon destined to become an accepted adjunct to travel in the air.

More and more equipment will be needed—telephones by the million, copper wire by the millions of miles, parts and accessories ranging from delicate springs to giant reels of cable, from the simple transmitter mouthpiece to the highly complex telephone switchboard.

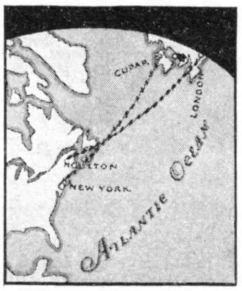
To meet this program of expansion Western Electric's manufacturing facilities are being doubled. Huge additions to plants at Chicago and at Kearny, N. J.—a new factory at Baltimore—all this is evidence that however great the demand for telephones in 1930 or 1940, that demand will be satisfied.

In homes

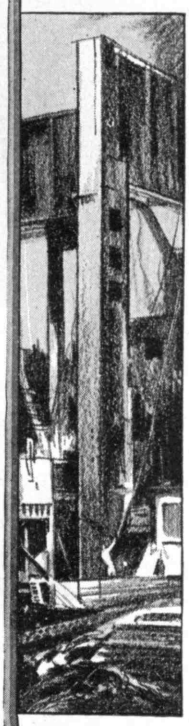
In offices



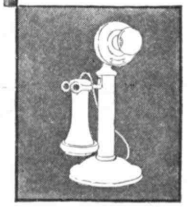
In airplanes



Across the ocean



This busy scene is typical of Western Electric growth at Baltimore, Chicago and Kearny, N. J. It is growth made necessary to provide telephone apparatus whenever and wherever needed.



Western Electric

MAKERS OF YOUR TELEPHONE

A BILLION WILD HORSES

(*Continued from page 11*)

airplane pilot, the "steel bird," provide plenty of opportunities for finding romance, mystery, and danger in work.

4. The machine has deprived the housewife of her sometime skills, and so forced many women into futility and neurotic unrest. It has also forced women into the wage-earning class and thus greatly increased the independence and the dignity of the sex as a whole.

5. The Power Age has broken up the *mores* of marriage, the family, and religion to a marked degree. This is a painful process, but perhaps invigorating.

6. The machine has ruthlessly destroyed a whole age of art, but is busy creating a new age, which already in architecture, in design (say that of an airplane) has achieved distinction. The process furthermore is by no means complete; give the machine a few more years.

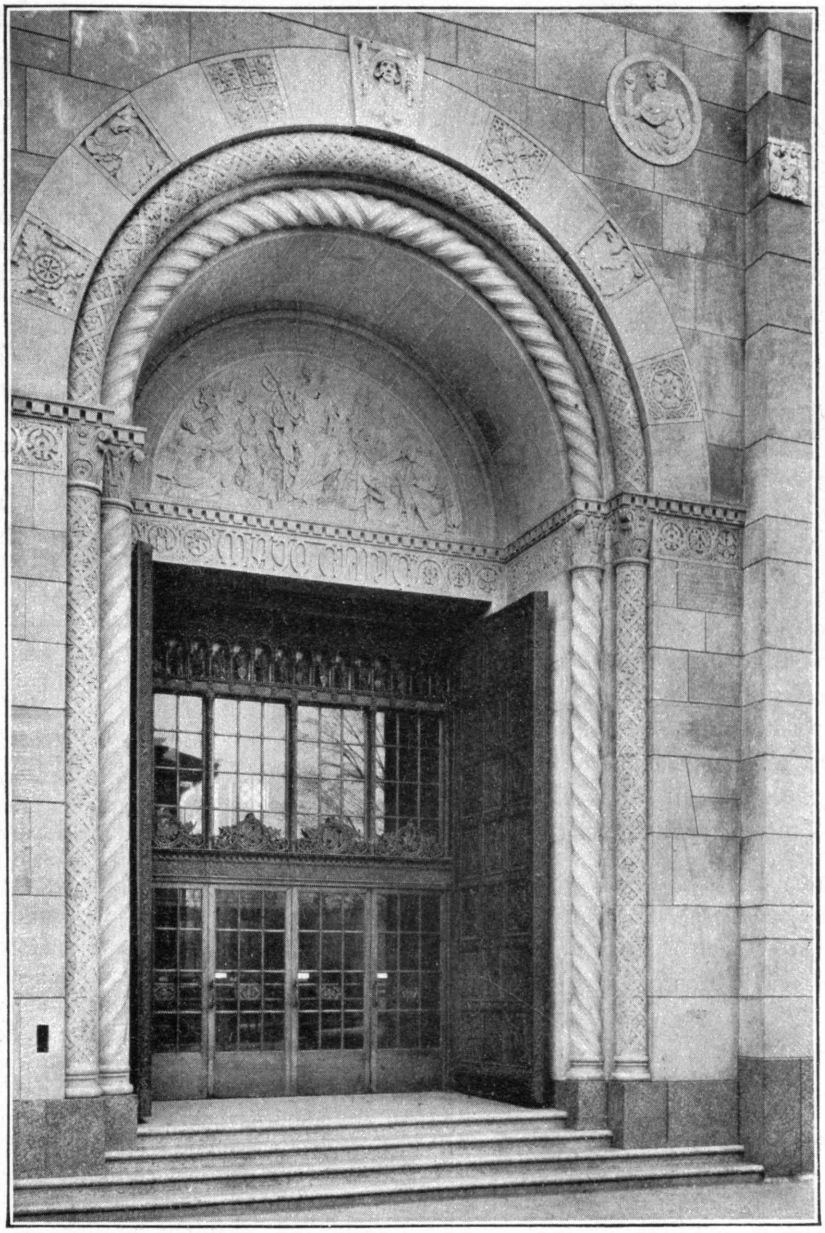
7. The quality of certain goods has undoubtedly declined as compared with the hand-made article, but the quality of others has improved. If the machine is kept within its technological limits, it can provide a whole new budget of useful, durable and even beautiful products. Regard an ocean liner or a well-built motor car. We also note the beautiful mechanisms employed to turn out terrible trash — for instance, the broadcasting control board, with a fourth-rate politician (shall we say the normal variety?) before the microphone.

8. We tend to draw our knowledge increasingly from written documents and decreasingly from first-hand experience — as did the guild apprentice. This divorces us from reality, but gives us wider scope.

9. When the workman left his cottage for the factory, he lost his economic independence. So long as the owner of the factory has no interest in labor save as a commodity, the workman is distinctly worse off than before. If, however, the factory is run on the principle that the worker is a human being, and, in the last analysis, it is for him that the wheels of industry are principally turning, he may well stand to gain more than he has lost. More economic independence is to be secured in a machine technology, humanly controlled, than ever obtained in the handicraft era.

There is some overlapping in the above lists, but it is inevitable. All items are part of one organic phenomenon — prime movers clanking about in the social structure. The reader must draw his own conclusions, but as I study the schedules, I incline to the belief that machinery has so far brought more misery than happiness into the world. It has, however, brought the fresh winds of change; and with them vitality and invigoration. We are not in the lock-step of the Middle Ages, or the later days of Egypt. With change, improvement is always possible. The trend is towards improvement in many departments. If the triple menaces of war, technological tenuousness, and failure of natural resources can be forestalled, and some sort of conscious functional control inaugurated, perhaps in another generation the net balance will fall on the other side, and the pluses outrank the minuses.

If you have followed me thus far, you are doubtless prepared to accept my apology as a layman and interloper into fields where I do not belong. (*Concluded on page 44*)



Entrance Mayo Clinic Building, Rochester, Minn. Lower stories are of variegated shot-sawed Indiana Limestone. Ellerbe & Company, Architects. G. Schwartz & Company, Rochester, Minn,. Builders.

For Natural Beauty

WHETHER your building is to be rich with sculptural detail or otherwise, Indiana Limestone will give it a natural beauty unequalled by any other building material. Architects the country over find in this handsome natural stone the ideal medium for executing their designs. Owing to enormous deposits and improved methods of production, it is now possible to build of Nature's building material for only slightly more than if man-made substitutes were used. Let us send you an illustrated booklet showing examples of collegiate and school buildings executed in Indiana Limestone. Or a booklet showing residences. Address Dept. 826, Service Bureau, Bedford, Indiana.

INDIANA LIMESTONE COMPANY

General Offices: Bedford, Ind. *Executive Offices:* Tribune Tower, Chicago

A BILLION WILD HORSES

(Concluded from page 42)

"A man who cannot build a radio, design the simplest back country bridge, start his engine two times out of three when it mysteriously stops on the road — what does he know of machines; what value has his appraisal of the Power Age? He is wrong about skill, his two-hour airplane war is nonsense, his five million robots are fantastic, there is no such thing as technological unemployment, why. . . ."

What more could an author ask? He has made the professional challenge the amateur; turned the expert from his specialized groove and made him glance for a moment at the total scene. I sincerely hope that you tear me and my book to pieces. The man of science has loosed the billion wild horses on the world — and beautiful galloping steeds they are — but by and large they are running wild. We laymen are helpless before them. Only you, from whose brains they have sprung, can tame them.

HALYARDS AND REEF-TACKLES

(Continued from page 15)

tions. Boston, Salem, New Bedford, Newburyport, and other New England towns and cities have much collected material in museums. All in all, we have many aids in our pursuit, and often a curator, unable to answer a particular question, can put the inquirer on the right road to what he seeks.

There is one pretty sure method of obtaining unobtainable information. Let the artist commit himself irrevocably on his copper plate and issue his edition. Sooner or later will appear the critic who knows that the artist is wrong and who knows the proper answer. And he may be right.

In some particular cases, such as that of the frigate *Constitution*, we find a great deal of material on which to base a portrait. From Bowen's engraving through to the lithographs of Currier is quite a distance measured in years, and, as might be supposed, there are some very distinct differences in representation to be reconciled. Yet, considering the possibility of various changes made from time to time, and for different services, or for different commanders, all may appear logical. Under such circumstances we would limit our study to one particular period, say that of 1812, of her greatest exploits, and for that we will find that the two models built by the late Colonel W. F. Spicer will answer most of our questions. The first model, that in the Marine Museum in the old State House (they are both in Boston) is the result of much research and thought, and embodies all its builder could discover over a period of years. The second, in the Art Museum, represents his latest views and is, in some ways, even more nearly complete than the first. The close observer will note some differences; Number 1 has a straight sheer, like the original ship, still with us; while Number 2 has a beautifully curved sheer line, like that shown on the original lines by Humphreys. Both are right. It will be remembered that at her launching she moved a short distance down the ways and stopped, and it was a month later before she was afloat. During this time she became slightly hogged, *(Continued on page 46)*

HALYARDS AND REEF-TACKLES

(*Continued from page 44*)

straightening out her original sheer. Instances more or less like this constantly occur, and give the student plenty to consider.

With all this source material at his command the artist is fairly well equipped for that part of his work, and he may decide whether his proposed picture will be merely a ship, or a portrait of a particular ship, or an historical event such as a naval action. In the first case his task is simple, given a general knowledge of his period. With the portrait he takes on additional responsibilities, and his critical field is enlarged. In the last case he adds the obligation of historical accuracy to those imposed by the portrait, and this includes wind, weather and lighting as well as seamanship. Now and again exigencies of composition or chiaroscuro lead him to take liberties with the cold facts, but he must be cautious in this for his critics have a right to be literal if they choose.

Let us take a middle course, and suppose that our brave artist decides on a portrait. About the first step is (or it would better be) assuring himself that he can find authentic data for his vessel's appearance, her model, her spar proportions and cut of sails. Her deck fittings are important though he can evade them by taking his point of view to windward and listing her away from the spectator. I recall looking up the *Houqua* and finding three oil paintings of her, all of them showing her in a typhoon, dismasted, and decks swept clean, and was on the point of giving her up for lack of sufficient data when I found a fourth picture which, with the "Recollections" of Captain Low, her master, gave me what I needed.

Now for the composition, and the seamanship: shall we take a lee bow view (the most popular), or a weather bow with all the sails arching away from us, or a broadside on, or quartering? Perhaps our particular subject needs a particular treatment. Again, shall we bring her up on a taut bowline or check in the yards and haul up the weather clew of the mainsail? And here we get a lot of fun in our vicarious skippering, we rig out the booms and set studdingsails, we take them in as the wind hauls ahead, we clew down our topgallantsails as it comes on to blow (remembering as we let go the halyards that we must call them 'gan's'ls), up mainsail, in flying jib, all hands reef topsails — truly a noble vessel and a fine crew for we have done all this work very quickly and have shed sketches around about like falling leaves in autumn.

And while we've been hauling out reef-tackles and slacking halyards we've had to keep an eye on sea and weather. We've watched the smooth sea darken, and the white caps come till it was all white to windward. We've seen the sea get up, a long sea, or a short steep affair of sudden cresting, peaks, valleys, ridges and even tablelands so to speak, and we've noted how the body of a wave outruns its breaking. We've seen the spray over the knightheads, the green sea that fills the waist, and even the little feather at the stem when she gathers way in a light air. And so, unlike her skipper, we can choose our weather and our course, but we must fit our sail carrying to that choice once we have made it. (*Concluded on page 48*)

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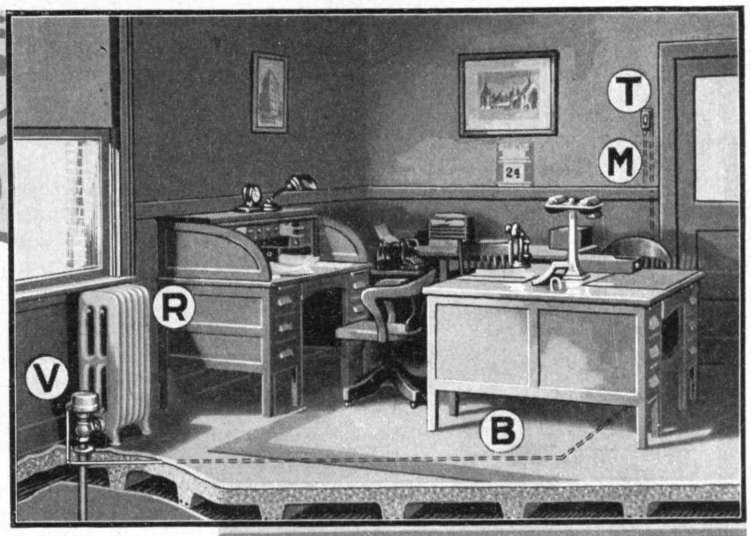

Johnson Control Direct Radiation In Office Buildings EXAMPLE No. 1

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Write Now for this Interesting Johnson Book

HALYARDS AND REEF-TACKLES

(Concluded from page 46)

Placing her in the water has little problems of its own. She has weight, but she is buoyant, she is becalmed, or she is moving fast or slow, she is listed or on even keel, she is in smooth water or in a seaway, she pitches or she rolls, perhaps both together. She lays over until her lee cathead is buried and an acre of white spreads to leeward of her, or perhaps it's a following sea that crests up over her taffrail, or maybe a flat calm where the wavering reflection is all that indicates the never ceasing motion of the sea.

And there you are! You have your data, your model, your rig, your seamanship, your sea, and your weather. Out of these you make your composition and your picture, never forgetting that good drawing must be your foundation in the matter of ships even as it is in representing the human figure. As to media, will you make an etching in bitten line, soft ground, aquatint, or drypoint? Or a lithograph, or a wash drawing, or a water color? Take your choice, your preliminaries are the same.

I have used the terms "artist" and "student" more or less interchangeably; this is approximately correct. The student is often an artist, the artist is always a student. He has to be.

BOULDER DAM

(Continued from page 18)

filled with water and constituted a lake of considerable size. The Colorado River from time to time, wandering over its delta, has poured into the lake, filling it to overflowing with fresh water, then swinging toward the east, the river has gone into the gulf. The lake, gradually drying up, has become saline. Deposits alternating with fresh and salt water shells show that this has happened many times in succession.

When first discovered by white men, the lake named Salton Sea had shrunk to a small body in the bottom of the depression. Its waters were so brackish that salt was readily made on the shores. About thirty years ago a few men of vision saw the possibility of bringing Colorado River water to the rim of this depression. After many trials and losses of property, and even of lives, a successful irrigation system was established. Settlers poured in by the thousands, cities have been built; fabulous profits, and also great losses, have come from agriculture and speculation in city and suburban lands. Meantime the Colorado River has been trying to get back into this depression. It broke through at one time and the waters, rising in the bottom of the basin, in the course of weeks began to menace the lower lying fields. Such an occurrence may happen at any time, and unless checked the flood waters in the course of months would gradually rise to the level of the populated areas. Thus constant vigilance is required to maintain the dikes along Colorado River and to rebuild these when the dry season comes on. Much of this great expense and occasional panic may be obviated when the floods are stored.

It will be many years before the Boulder Canyon Dam can be completed to a point where *(Concluded on page 50)*

The Regicide

On January 30, 1649, all England shrank with horror. The victorious Roundheads had repudiated the "Divine Right of Kings," and His Most Christian Majesty Charles I was to be beheaded. Often in the past had nobles and archbishops plotted, assassinated, kidnapped, but never before had British commoners indicted their King for High Treason, tried him in open court, sentenced him to death. Puritans whispered scared prayers. Cavaliers cursed, vowed swift, gory vengeance.

Oliver Cromwell, almost the last to be convinced that Charles' death was necessary and hence the immutable design of Providence, had signed the death warrant. As TIME, had it been published February 1, 1649, would have reported the event:

.... Grim guards, gentlemen Roundheads, strode in at dawn to wake the King. Rising, His Majesty donned two shirts.... "So I may not seem to tremble," he said shrewdly, bravely. After cruel, nerve-shattering delays Charles I was led through subdued crowds to a scaffold set up outside the windows of his own banquet chamber in Whitehall. Thousands had come to gape, including most of the Roundhead leaders, but Oliver Cromwell was not there.

Standing fearlessly erect on the scaffold, Charles I looked out over the pikes of Roundhead soldiers, glimpsed a shuffling, uneasy throng in which there must be still some loyal subjects, tried to reach them with his voice. The crowd murmured, strained to hear. Soldiers clinked their weapons, making it impossible for the royal words to carry far. Few heard His Majesty say: "For the people, truly, I desire their liberty and freedom, as much as any body whomsoever! But.... their liberty and freedom consists in having government, in those laws by which their lives and goods may be most their own. It is not their having a share in the government; that is nothing pertaining to them. A subject and a sovereign are clear different things."

It was two o'clock. Charles by the Grace of God King, Defender of the Faith, took off his coat and doublet, looked up a last time at the English sky, spoke briefly to Bishop Juxon, and lay down full length with his head on the block. The crowd swayed, surged upon the soldiers. But pikes and swords cowed loyal hearts. Charles Stuart prayed a moment, waved his hand as a sign that he was ready.

It was two o'clock, four minutes. Whirling high and shimmering in the sunlight the axe descended, clove. With gibbering pride the black-masked executioner held high a dripping royal head, his first.

.... Body and head were united later; reposed that night in the once royal banquet hall, guarded by two nobles, one the Earl of Southampton. A black shroud up to the chin hid where the axe had fallen. Candles burned by the head.

After midnight, while the watchers sat sunk in melancholy revery, a figure muffled in a dark cloak quietly entered the hall, paced slowly toward the body, stood looking down at the face of Charles I. Turning on heel at last the figure stalked away, muttering "Cruel necessity!" It was Oliver Cromwell...

BOULDER DAM

(*Concluded from page 48*)

the floods from the upper river will be held. Meantime Imperial Valley is getting along as best it may. It will always be exposed to floods from tributaries below the dam. Many engineers are inclined to the belief that as far as flood protection is concerned, the best immediate plan is to open the mouth of Colorado River through the delta jungle to let the floods pour into the gulf through a short direct channel maintained or repaired during the periods of drought. Also it is asserted that a dam built for flood protection alone can be constructed at a tithe of the cost of the Boulder Dam.

The people of the United States as a whole have been more aroused by the possible destruction by floods than by the importance of aiding Southern California in getting a larger water supply.

A third undertaking closely joined with both of these, but quite separable, is that of the All-American Canal, one which, if built, will serve to bring under irrigation still larger areas and add to the wealth of this part of California.

The need for the All-American Canal arises from the fact that the present canal, bringing Colorado River into Imperial Valley, or Salton Sink, skirts around the edge of low hills. The boundary between the United States and Mexico was unfortunately drawn in such a way as to cross the point of these hills, forcing the canal to be built partly in Mexico. It is possible for Mexico to shut off the supply of water from the valley and keep the canal for themselves. It is highly improbable but constitutes a threat or trading point in securing a distribution of water to Mexico.

To meet this condition it is proposed to boldly go through these low hills and carry the seventy-five mile, concrete lined canal at a higher level on our side of the international boundary. The cut for much of the way will be fifty feet and in places may be 150 feet deep, not large when compared with the Panama Canal, but involving an expenditure of $38,500,000 and bringing in a number of unprecedented questions of maintenance because of the fact that the route of the canal is through drifting sand hills which tend to move under high winds. There is no doubt that but the canal can be built and kept free from sand. Whether it will be an economically wise investment remains to be seen.

Before this canal can be built, contracts must be entered into insuring ultimate repayment of the cost. Meantime $100,000 has been set aside for survey and location of the canal, of this one-half being contributed by the land owners in the valley.

But why do not the people interested build this canal themselves under an irrigation district organization such as has been found successful in other parts of California? Possibly they may but as international questions are involved, in diversion of water from Mexico, it has been urged that the Federal Government should build the works. It is a question not so much of business as of international policies. The economic question as to whether it will pay must be subservient to the political situation. It is this fact that makes the solution of the Boulder Dam problem so difficult.

Can you pick the names to fill the 6 blank lines below?

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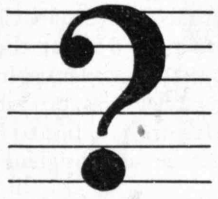

THE panel opposite lists 6 of the most notable investment opportunities the past 5 years have offered. Investors in these and similar securities have multiplied their original capital 200, 500, even 1,000%.

By 1934, there will be 6 outstanding names in the lower panel as well. But — the investor who obtains the *real* profits, will be the man who can fill the blank lines, *before 1934 has arrived.*

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FORESTALLING DEATH

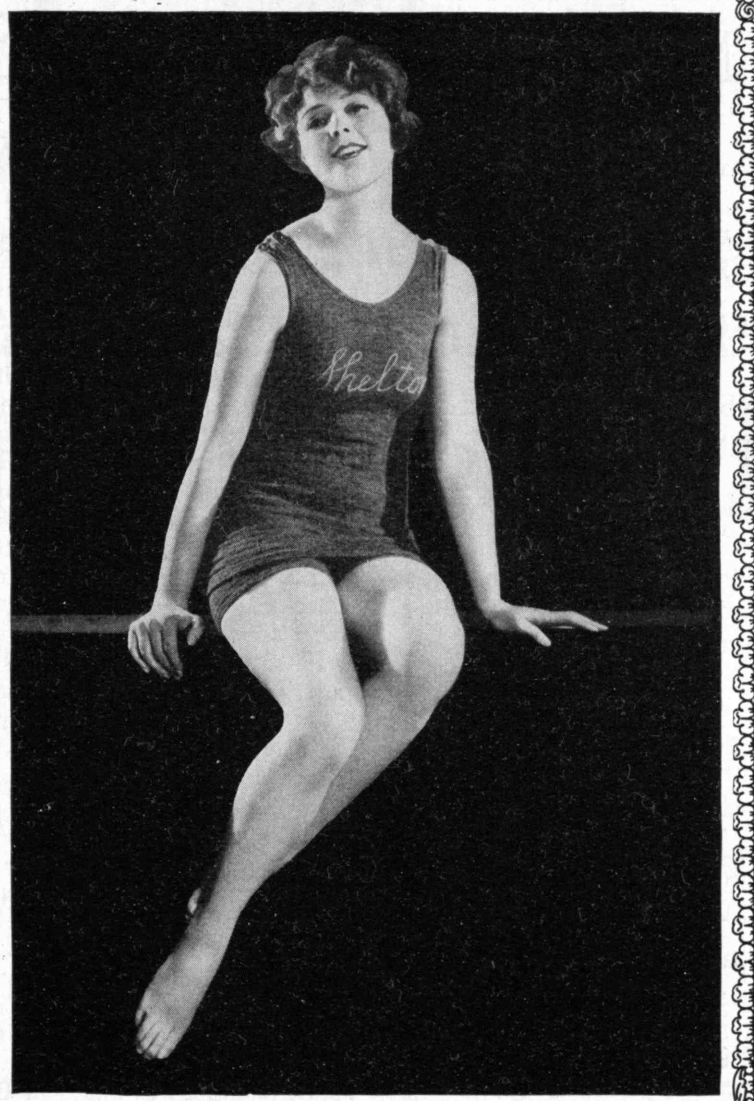
(Concluded from page 23)

duration of life was almost exactly ten per cent greater in those subjects receiving the optimal diet than in those favored only with the adequate diet. These results were, furthermore, subjected to rigid statistical analysis and found to be truly significant and not accidental in the order of about 100 to one, which is leeway enough to satisfy the most meticulous biometrician.

Results such as this with appropriate laboratory animals can be translated into human terms. While some men have been called rats, the converse is hardly true. The white rat does, however, exhibit the same nutritional characteristics as man and having a comparatively short, if hectic, career, this rodent is a valuable subject for dietary investigations. In terms of human experience, therefore, this notable investigation indicates that at least six years might be added to the span of human life by means of suitable attention to the securing of an *optimal* diet. Here, then, is one possible solution to the problem of the extension of adult life and the cutting down of the curve of death in the advanced ages.

Another lesson in this experiment is the potent influence of pure milk on longevity. Is it possible that we have had the fountain of youth within our grasp throughout the ages that man has been seeking this liquid phantasm? Milk has always been recognized as the one most nearly perfect food, containing practically all of the elements needed in human nutrition, but apparently it possesses hitherto undreamed of virtues.

When all is said and done, the attainment of a useful longevity involves a combination of complex elements. The span of life has been lengthening, largely, though by no means wholly, because of sanitary achievements, and it will probably continue to increase for some time. Civilization may become too strenuous for the human organism; there are some who declare (Stuart Chase, '10, for instance, in his article on page 9) that the modern machine age is already too abrasive for average humanity. After all, the Roman philosopher was probably right when he said that "it is not life to live, but to be well," and, in that endeavor, nutrition and hygiene will always play compelling parts.



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BOOKS

(*Continued from page 35*)

Mr. Muschamp, the author of this latest biography of Audubon, is interested not merely in eulogizing him but in showing how the unvarnished facts of his life make his name a worthy symbol. Mr. Muschamp's lengthy bibliography and his quotations of many autobiographical passages from "Audubon and His Journals" (as edited by his granddaughter, Maria R. Audubon) mark his book as an authoritative life of the painter-naturalist. In fact, in letting Audubon speak for himself, Mr. Muschamp reveals himself as a very discerning writer.

Audubon's life, in its historical setting, external facts, and internal struggling, is particularly suited for interesting biography. A Frenchman by birth, he spent his early childhood amid the lurid days of the French Revolution — saved though he was from the worst of the turmoil by his innate love of nature and the humane understanding of his foster stepmother. In 1803, his father sent him to America in the hope that he would establish himself in some profitable business. "The young dandy's" description of this sea voyage and others that his career was to bring to him gives a vivid insight into nautical developments. At this time Robert Fulton was still experimenting with a generally regarded absurdity.

Having passed through a series of external romantic difficulties, Audubon was married in 1808 to Lucy Bakewell, and as a pioneer merchant along the Ohio River he tried to support his increasing family. So luring were the woods to him and so instinctively interested in birds was he that as an individual in this "competitive man-made economic work," fortunately he failed miserably. Commercial success could not have brought, as complete failure did, the "realization that it might be possible for him to earn a living by using the talents with which nature had endowed him." As Emerson later phrased it, he felt at last that what was true for him in "his own private heart" would in time "be true for all men."

"My wife determined that my genius should prevail," wrote Audubon in his journal. Out of Lucy Bakewell's absolute faith in him and her practical direction of his affairs together with Audubon's own conviction of his genius, emerged Audubon's *Birds of America* and his *Ornithological Biographies*, which the great scientist Cuvier declared to be "the most magnificent monument which has yet been erected to Ornithology."

E. P. K.

Constantinople Women's College

UNDER FIVE SULTANS, by Mary Mills Patrick. $4.00. xi+357 pages. New York: *The Century Company*.

IN 1875, coincident with the opening of Wellesley College, another institution of higher education which had its root in Boston got under way in regions far different. It was an American School for Girls, now Constantinople Woman's College, on the Asiatic bank of the Bosporus overlooking that historic strait and its union with the waters of the Golden Horn, with the domes and

(*Continued on page 58*)

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BY JAMES A. TOBEY

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A survey of the flood control methods utilized in the Mississippi valley and some pertinent recommendations (in particular, the establishment of a laboratory for the study of river hydraulics) for improved procedure BY JOHN R. FREEMAN

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The use of objective methods for the diagnosis of endocrine disease, during nineteen years of research at the Evans Memorial Hospital

BY ALLAN W. ROWE

PRIMITIVE THINKING (July 1929; Page 457)

The occult beginnings of authentic science BY TENNEY L. DAVIS

THE ENDOCRINE GLANDS (July 1928; Page 473)

The Public hears much speculation and little truth about endocrinology. The following article summarizes some scientific facts

BY ALLAN W. ROWE

Address orders to the EDITORIAL OFFICES, ROOMS 11–203 *and* 11–205, M. I. T., CAMBRIDGE, MASS.

BOOKS

(*Continued from page 54*)

minarets on the hills of Stamboul beyond. For fifty-three years Miss Patrick was in educational work in Turkey, forty-nine of them were spent on the faculty of this daring pioneer, and she was its President from 1890 when a collegiate charter was granted it by the Massachusetts General Court.

In this book she has given us a vivid record of Turkey and her history through these momentous years. Through her eyes we look sympathetically upon the struggle of an industrious friendly people to throw off the tyranny of Abdul Hamid II of bloody memory and to overcome the evils of poverty, ignorance and racial conflict within their own borders. The enormous power and responsibility of rulers and ruling groups is made clear to us, and we come to see that there is no "Unspeakable Turk" in the European picture, that the odium of massacre and deportation must be borne by a relatively few in high place and the inevitable hoodlum scum which breeds in every country.

C. HALE SUTHERLAND, '10

Brief Reviews

CROOKS OF THE WALDORF, by Horace Smith. $2.50. 318 pages. New York: *The Macaulay Company*.

JOE SMITH for over thirty years shooed bad folk away from the late Waldorf-Astoria Hotel and, now with the help of friend Horace whose relationship, if any, is unstated, indites his memoirs. Prohibition's effects on hotels and crooks are lustily deplored in Chapter VIII and then they rework this homily to smack the Volstead Act again roundly in Chapter XII. Otherwise the book is unexceptional.

THE PAGEANT OF THE PACKETS, by Garnett Laidlaw Eskew. $3.00. 314+xiv pages. New York: *Henry Holt and Company*.

FEW people are unfamiliar with the famous Currier and Ives lithograph depicting the race between the Mississippi River packets, the *Robert E. Lee* and the *Natchez*. Mr. Eskew brands it as purely imaginary, quoting from one J. P. Coleman who witnessed part of the race: "Large-size lithographs purporting to represent the *Lee* and *Natchez* in this race, like the one circulated many years before in connection with the contest between the *Eclipse* and the *Shotwell*, bore not the slightest resemblance to the contestants of 1870, for boats were rarely in sight of each other during the race, although in the picture they were represented as being almost abreast. . . ."

This history of Mississippi steamboating, despite its scrap-book nature, or perhaps because of it, is colorful reading. It describes the great differences between the Mississippi packet and the ocean-going steamer, their evolution from the first crude specimen built by Henry Shreeve in 1817 to the 2000 or more powerful, busy boats that plied the river in 1859. It describes the frightful

(*Concluded on page 60*)

BOOKS

(*Concluded from page 58*)

fatalities from boiler explosions. "There was no scientific figuring of stresses and strains. Few, if any of the shipyards men had any technical schooling: they wouldn't have known how to follow a blue-print if they had had one! The wonder, it seems to me, is that they were able to turn out such marvelous boats with such an astounding lack of the scientific knowledge that is supposed to be necessary to the correct building of such things as big boats."

Eskew, consciously or by happenstance, timed his book to appear fortunately close to the celebration held on the Ohio River, October 22. Marking the opening of the lock and dam system on that river, President Hoover, on board the *Greenbrier*, started a fleet of packets and tow-boats from Cincinnati to Louisville.

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The following are typical of the inquiries received:

1083. A large organization in the State of Illinois is interested in securing a high-grade analytical chemist, about thirty years of age, with training on the petrographic microscope. Experience, ingenuity, and an aptitude for this work necessary.

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DIVISION OF INDUSTRIAL COÖPERATION & RESEARCH

MASSACHUSETTS INSTITUTE *of* TECHNOLOGY , CAMBRIDGE

THE TECHNOLOGY REVIEW SUPPLEMENT

NEWS FROM THE CLASSES AND CLUBS

1882

Naukeag Inn overlooking Lake Naukeag in the town of Ashburnham, Mass., was the place selected this year for the Forty-Seventh Annual Reunion of '82. Here, at noon on June 20, there assembled eighteen members and guests, who, after a social time on the lawn moved to a dining room reserved for the occasion where dinner was served.

Attending the outing were Miss Ames, Dr. and Mrs. French, Mr. and Mrs. Gooding and their friend, Mrs. Hammond, Mr. and Mrs. Hall, Keyes, Mr. and Mrs. Lewis, John Low, Mr. and Mrs. Walker, Mr. and Mrs. Warren and their daughter, and Darrow. Cheney, who expected to be present, telegraphed to the Inn, "Very sorry I cannot be with you all today, best wishes." Jenkins and his wife were also expected but sent word that they could not join us.

Letters from Adams, Chapman, Duker, John and Henry Ross expressed regret that they could not attend the Reunion. The high lights of hilarity were reached in the letters of Adams and Duker. Faunce was attending his Fiftieth Harvard Reunion, so could not be with us. Our niece, Louisa Hall, also wired a friendly greeting.

After dinner a vote of appreciation was passed for the many years of faithful service which, as Secretary, Walter Snow has given to his Class, of regret for his absence from a Reunion, and of hope that his health would be restored.

As this was the first gathering of the Class since the deaths of Rufus Herrick and James Munroe, the Acting Secretary was instructed by vote of the members present to send a message of sympathy from the Class to Mrs. Herrick and Munroe's two daughters, expressing the high regard in which each of these two members was held.

The rest of the afternoon was spent in lighter vein at the dinner table and on the grounds of the Inn. There was conversation, reminiscences and Miss Ames read an entertaining poem, "The Eohippus," by Charlotte Perkins Gilman which received deserved applause.

It was good to see Frank Hall and his wife there, also George Warren, his wife and daughter. Fred Gooding and his wife with their friend, Mrs. Hammond, spent the night before at the Inn, as June 19 is the Goodings's wedding anniversary. It will be remembered that June 20 is the wedding anniversary of Frank and Mrs. Hall and of George and Mrs. Warren. John Low, who has not been to a class reunion in several years, gave us a pleasant surprise by coming from New York for this one.

The success of the occasion was largely due to Charles French, who was very helpful in arranging details. While the outing seemed to be enjoyed, there was wanting, to make it complete, the guiding hand and kindly presence of our beloved friend and classmate, Walter Snow and Mrs. Snow and their daughter Rachel. It is difficult to express adequately the saddening thought that Walter will not meet with his Class again. At his home in Falmouth on August 9, he passed away from a heart affection of some six years' standing. Three members of his Class attended his funeral in the First Congregational Church at Falmouth on August 11. In acknowledging a gift of flowers from his Class, Mrs. Snow writes, "They, with our own family tribute, were the only ones closest to him, and I like to think he would be most glad to have it so. For next to his family, he loved '82."

Walter Bradlee Snow was born in Watertown, August 13, 1860, the son of George K. and Mary J. (Bradlee) Snow. He was graduated from the Watertown High School in 1878. In his senior year at the Institute he was elected permanent Secretary of his Class, and for forty-seven years he has dignified the office by his faithful and efficient management of its affairs; giving generously — yes, affectionately — of his time and thought to class matters. During these years he has never missed a class gathering until the Reunion last June, when failing health prevented his attendance.

The Tech was founded by '82 with Walter Snow on its first board of directors. Soon after graduation he was appointed assistant in the Department of Mechanical Engineering at the Institute and in 1883 he entered the employ of the B. F. Sturtevant Company, where, for twenty-five years, he was connected with the engineering department. In 1907 he organized The Walter B. Snow Associates Publicity Engineers, which later became Walter B. Snow and Staff, Inc. On account of failing health he retired from this organization last spring.

He was always active in Technology matters; he was appointed a member of the Corporation in 1909; was Past President of the Alumni Association and Secretary of the Association of Class Secretaries. This Association he was largely instrumental in forming. To record all of his activities since graduation, would require more space than can be given to these Class Notes. In another article, to appear in The Review, mention will be made of his professional work, his connections with Technology, and his memberships in many organizations. He is survived by his wife whom, as Miss Bertha Horn of Watertown, he married on October 22, 1884; his daughter, Miss Rachel Parker Snow, a graduate of Wellesley College; and his brother, William G. Snow, Secretary of the Class '88. — ALFRED L. DARROW, *Secretary*, 8 Beacon Street, Boston, Mass.

1886

A recent number of *The Medical Woman's Journal* contains an interesting paper on "The Unnecessary Waste in the Education of the Hard of Hearing," written by Dr. Alice G. Bryant. Particular stress is given to the need of efficient instruction in lip reading.

Ricker, who, for the past eleven years, has been the Washington, D. C., representative of the Portland Cement Association, has been transferred to Chicago, where he has charge of one of the bureaus of the Association. The esteem in which both he and Mrs. Ricker were held in Washington was evidenced at a luncheon given them by some two hundred friends on the eve of their departure. Mindful of the dangers to which citizens of the Windy City may be exposed, the Federation of the Citizens' Associations of Washington, through their President, presented the Rickers with both armor and armament. The armor consisted of a leather vest made from the hide of the (Democratic) donkey which is realized by no one better than by dwellers in Washington as one of the most impenetrable substances

1892 Continued

"Mr. Hoxie had been in failing health for several months. His illness was not considered acute, however, and although he had been under treatment for some time, his death last night came as a shock to his family and neighbors."

For news of the living I first present extracts from a letter which Sweetser wrote. "Several '92 men have been doing things, but we have all been so busy that we do not have time to write anything about it. I think, however, that Sumner B. Ely should be mentioned in connection with the Second International Conference on Bituminous Coal, which was held at Carnegie Institute of Technology in Pittsburgh last November. Ely was Secretary of this second conference as well as of the first conference which was held in November 1926. Dr. Thomas S. Baker, President of the Carnegie Institute of Technology and Chairman of the Committee on the International Conference on Bituminous Coal, told me that much of the success of the meeting, which included many months of preliminary work, was due to Sumner B. Ely.

"It was my pleasure to be asked to discuss one of the papers, and to be present at the banquet that was given to the foreign delegates by Dr. Baker. I gave a short discussion on the paper presented by Dr. A. C. Fieldner, Chairman of the American Engineering Standards Sectional Committee on the Classification of Coal entitled 'The Classification of North American Coals.'

"Ed Wells of Dayton was seriously ill with pneumonia during the Christmas holidays, but is fully recovered. Ed's son, Ted, is the President of the Wells Company, Tires and Automobile Supplies, in Columbus, Ohio."

Elisha Lee often gets into the news and here is an extract from the New York *Times* of last April: "Elisha Lee of Philadelphia was elected a director of the Norfolk and Western Railway Company at the annual and special meeting of the stockholders here today. He takes the place of Samuel Rea, who died last May."

Here also is something about Shute, who says that chemistry is to unlock the secret of coal power. "The time when the energy in one point of coal will carry a traveler from coast to coast is forecast by Henry D. Shute, Vice-President of the Westinghouse Electric and Manufacturing Company."

And finally Henry L. Johnson comes into the picture. He is organizing the division of printing and graphic arts for the Rosenwald Industrial Museum of Chicago.

Share with me also this letter from Kales: "I spent a delightful summer down on Cape Cod at my Harwichport home where we held our Reunion two years ago. I know you will be glad to hear that I now feel quite like my old self and am not the washed-out being that attended the Reunion. During the summer Charles Parke and I had a fine game of golf, and as I was his guest, he juggled the score so as to make me feel good and I came out ahead.

"Mrs. Kales and I are expecting to leave for the Orient next month. We plan to attend the World Engineering Congress in Tokio during November, and then to go on to Shanghai to visit my brother who was in Technology with the Class of '07 and is now running an office there as architect and engineer. After going down the China coast and stopping at Hongkong, we shall put in at Sigon, crossing over by rail to Bangkok in Siam. Incidentally, my brother did a lot of work in Bangkok, building a number of beautiful reinforced concrete bridges several years ago. We shall then go down to Java and the Island of Bali for a short stay. By that time I think the desire to see home and our family will be so strong with Mrs. Kales that we shall return to Singapore and take a ship for New York, by way of the Red Sea and the Mediterranean. It is possible that we may stop off for a little time in Egypt, but we expect to be back in this country by the middle of March." — JOHN W. HALL, *Secretary*, 8 Hillside Street, Roxbury, Mass.

1894

On Friday, September 6, the Boston *Herald* carried in its series of "People You Ought to Know" a brief account of Henry Warren, together with a very poor reproduction of his photograph. Every '94 man will agree that Warren is one of the people you ought to know and especially everyone who has attended the class reunions from time to time, for Warren is almost always to be depended upon as among those present, and a constant source of pleasure to any group of which he is a member. The article in question slips over a number of details in Warren's career, such as the invention with Professor Whipple of the thermophone and some other devices which he has fathered, and devotes most of its space to the work on the Telechron springless clock, the electric clock which has become not only the basis of one of the largest clock manufacturing industries in the country, but an instrument of precision of the highest value. Incidentally, this article calls attention to the fact that Warren lives on a farm in Ashland which he runs as a farm and not merely as a residence and that he combines this occupation with that of inventing and manufacturing and gets a great deal of fun out of life. This article stated what even his classmates might not have suspected, that the official records at Washington show that he is the holder of nearly a hundred patents.

Theodore Varney has moved more or less recently from Pittsburgh to New York where his office is at 2900 New York Central Building. Varney is at present, as he has been for many years, associated with Aluminum, Ltd. — Mrs. George S. Whiteside has changed her address from Portland, Ore., to 130 Clinton Street, Brooklyn, and Mrs. Caroline W. Barrett has also a new address, 77 Monmouth Street, Brookline, Mass., which she reported in July to the Alumni Association.

Leon K. Davis, who suddenly disappeared from the ken of the Secretary, has been located with the Factory Insurance Association of Hartford, Conn. It was with great regret to the Secretary that he was unable to locate Davis at the time of the Class Reunion.

George B. Haven, Professor of Machine Design at the Institute, was elected to membership on the Executive Committee of the American Society for Testing Materials at the thirty-second annual meeting of that Society at Atlantic City in June. Haven has done a very large amount of experimental work in the testing of various materials, but is unquestionably best known for the extensive work he has carried out in textile experimentation. At the present time he is in charge of textile research at the Institute.

At the meeting of the New England Water Works Association, held in Portland, September 16 to 21, Robert Spurr Weston was elected President of the Association. Weston has been Vice-President of the Association and very active in the organization and work of this professional society for many years, and his elevation to the presidency is a recognition of the esteem in which he is held by all the members.

The entering class at the Institute will have as members, sons of Lovejoy and of the Secretary. Some time when there is a moment of freedom from the arduous duties of Chairman of the Faculty and Head of a Department, the Secretary may make a census of the sons of '94 men now in the Institute. It is known that there are several, possibly as many as ten.

The thirty-fifth anniversary of graduation of the Class was held on the weekend of June 21 to 24. We met at Walker Memorial where a luncheon was served. After that the Class visited the President's office at the Institute and saw the portrait of Former President Crafts which had been painted by our classmate, Hazelton. In order to make it a '94 matter, a most attractive frame was purchased by the Class and this portrait will eventually hang among the portraits of other presidents of the Institute in Walker Memorial. It is, therefore, essentially a '94 gift to the Institute. Those present at the luncheon were Tenney, Bean, Day, Crary, Hunt, Warren, Phelan, Piper, Batson, Gilkey, Howes, Moore, and the Secretary. It was impossible for Phelan, Piper, and Howes to go with the Class for the remainder of the festivities.

After a short inspection of the Institute and a view of the Crafts portrait, we went by motors to East Bay Lodge at Cotuit where we have had our five-year reunions on two previous occasions and where everything possible for our comfort was done for us. Here we were joined by Duckworth, Taylor, and Weston. We had a very pleasant time, although the attendance was smaller than we had hoped. It so happened that many of those that we counted on had other engagements which could not be broken and we have unfortunately lost some of our most loyal members since our last reunion.

1894 Continued

On Saturday we played golf, and those who were not interested in this sport used the day in other pursuits, swimming, driving, and so on, but we all enjoyed ourselves and it was distinctly worthwhile. The golf of Saturday resolved itself into a tournament with two classes, Class A, those who really can play golf and had their clubs with them, and Class B, duffers who did not have any clubs of their own but each borrowed a single club, generally an iron, and played around with that. Class A was notable by its small number of members, Crary, Bean, and Tenney making up this honor list. Bean won the prize, although he and Crary were tied for the first eighteen holes and it was won by a hair's breadth on the second, the match being very close until the last hole. The prize was a box of Higrade golf balls.

The duffers really played some wonderful golf. I believe the largest score for the eighteen holes was 286 and the lowest 121. Obviously, the large score mentioned was obtained by one who had not played the game before. The Secretary won the prize for the duffers, but this was a little unfair because in years past he had had some experience with the game, although he had not played since the last reunion.

Horace Crary won the prize for the man coming the greatest distance to the Reunion. In accordance with the custom of the Class, officers for the next five years were elected and Crary was chosen President. Prescott was again elected Secretary for life, as has been the case during the past reunions.

The class dinner was held on Saturday evening at which special reports and matters of interest to the Class were taken up. A report on the Dormitory Fund matter was made and all present seemed to feel that we should keep on with this project and complete our quota of $80,000. By vote of the Corporation, the Thorndike bequest to the Institute can be used for dormitory purposes and half of it will be applied to '94's fund and the other half to '95's since Thorndike was closely associated with both classes. The Class of '94 has but a few thousand to go, and it is hoped that during the coming year it will be possible to make up the remaining sum.

On Sunday most of us found it necessary to return to Boston so the Reunion ended early on Sunday morning with the hope expressed by all that at the general reunion next year it may be possible to have some event especially for '94 men, at which time we trust there will be a large attendance. — SAMUEL C. PRESCOTT, *Secretary*, Room 10-405, M. I. T., Cambridge, Mass.

1896

The Secretary is writing these notes on the day before his departure from Cambridge for a period of four months on a trip which will include a month of visits to all of the important mining districts of the United States to see the latest developments in ore dressing, and will be followed by a trip to Japan with the party attending the World Engineering Congress there. The steamer sails from San Francisco on October 10 and is due back on December 11. Technology has kindly given a leave of absence for this trip. The Assistant Secretary will function for later issues during the absence of the Secretary.

Three deaths have occurred since the last issue. Lionel O. Robertson died on May 9, 1929, on the S.S. *Berengaria* while he was en route home from Europe. Although he had been ill for some time he had recovered sufficiently to make a business trip to Europe and had visited foreign textile mills for several nationally known designers of fabric and furniture. Although Robertson had not maintained a close connection with his Class, he was widely known as one of the foremost interior decorators in the country. At his home in Ravinia, Ill., there were frequent informal gatherings of many noted artists of the stage and the world of music. He was graduated from Cornell University before attending Technology. About 1904 he went to Chicago where he was a member of Joseph S. Strudy and Company, decorators. Later he became art director for the Tobey Furniture Company and served for twenty years. He was the author of a book on interior decoration called "Healthful Home." He organized the Association of Arts and Industries in Chicago, lectured for two years at the Art Institute of Chicago, and at the Academy of Arts and Sciences in Brooklyn. He was a member of the University Club of Chicago and President of the North Shore Art League and Drama Workshop of Ravinia. He was held in very warm regard by his associates in business and was known to them all as "Father," being a friend to whom all turned for help and advice. He was an inspiration to young artists.

Andrew W. Crawford died on June 28, 1929, very suddenly as he was approaching the tenth hole on the east golf course of the Merion Cricket Club near Ardmore, Penna. Although a prominent and successful lawyer, he was Secretary of the Philadelphia Art Jury, Executive Director of the American Federation of Art, Secretary of the City Parks Association, Trustee of the Fairmount Park Association, Director of the National Housing Association, Field Secretary of the American Civic Association from 1918 to 1920, a member of the Executive Committee of the National Conference on City Planning from 1923 to 1925. He was also a member of the Law Association of Philadelphia and honorary member of the Philadelphia Chapter of the American Institute of Architects, the Benjamin Franklin Club, the T-Square Club, Phi Beta Kappa, Phi Gamma Delta, and the Powelton Civic Association. He is survived by his widow whom he married on April 19, 1906. Both he and Mrs. Crawford were well-known art connoisseurs. Crawford was graduated from the University of Pennsylvania before coming to Technology and later attended Columbia Law School, and in 1897 completed his preparation for the Bar at the University of Pennsylvania Law School. He was Assistant City Solicitor from 1906 to 1911 and Professor in the Law School of Temple University from 1908 to 1923. One incident of his life occurred in July, 1920, while he was a guest at the Waldorf Astoria Hotel in Philadelphia when he captured a burglar who had entered his room.

Harry W. Brown died suddenly on July 24, 1929, at his home in Winchester. Harry was well known and loved by all of his classmates and he never failed to appear at class functions, if it were possible for him to do so. For more than thirty years he was associated with the General Electric Company — most of the time in Boston until his retirement about three years ago. He was a prominent Mason, a member of the Shrine, a member of the Winchester Country Club, the Society of the War of 1812, of the Founders and Patriots of America, the Sons of the Revolution, the Sons of the American Revolution, and the Bostonian Society. Early in his career he received a heavy electric shock in the laboratory and his friends always felt that this may have affected his health in later years. Since his retirement three years ago, he enjoyed life fully although with the knowledge of the condition of his heart he had to be careful of what he did. Previously he had suffered one or more severe illnesses of long endurance when his life was despaired of but fortunately he recovered. He is survived by his widow, Edith G. Brown, and two daughters. We shall all miss him at future gatherings.

Captain R. E. Bakenhus advised us of his change of address to Quarters "E," Navy Yard, New York, N. Y., where he will welcome all classmates. — After having made a trip around the world with Billy Anderson, Mark Allen went across with his boy to attend the Convention of Boy Scouts. A post card dated July 30 from Stockholm stated that he expected to go into Russia the following week, but although reporting that he and Billy Anderson had a wonderful trip around the world, he was still strongly of the opinion that there was nothing equal to the good old U. S. A.

Lloyd Wayne called on July 27 while he was in the East making a circle trip during his vacation. Wayne is a good old scout who never fails to make these annual trips and show his face to his classmates. Would that more of us could do likewise. He said that he had not seen anybody recently except Billy Andrew who is in business in Cincinnati and whom he had run across four or five months previous.

Russell Porter had his picture in the Boston *Globe* on August 12, 1929, as a result of the meeting of fifty amateur telescope makers at Springfield, Vt. He was the host at Stallafane, three miles from Springfield, on an eminence 1,300 feet above sea level. Porter had recently returned from Pasadena, Calif., where he was engaged in the preparation of the new 200-foot telescope of the California Institute of Technology, which, he reported, would not be ready for service for

1896 Continued

ten years. He returned to Pasadena in September to continue his work of designing this great telescope.

From Rockwell come several further notices. Marshall O. Leighton was up from Washington for the summer and gave a very good account of his activities. As a consulting engineer, he seems to be making a pretty good impression of success. — A card from Mark Allen states that he has been in Europe with his family having a great time. The United States, however, is still good enough for him.

Plans are now under way for a get-together in the fall for members of the Class. — Joe Driscoll has been playing golf with the good judgment and success he has used in constructing buildings, and that is no mean compliment, either. — John Rockwell had dinner with George Burgess at the Army and Navy Club in Washington the other day and was delighted with the evening's reunion. He learned, among other things, that Burgess leaves for Japan in the near future. — CHARLES E. LOCKE, *Secretary*, Room 8–109, M. I. T., Cambridge, Mass. JOHN A. ROCKWELL, *Assistant Secretary*, 24 Garden Street, Cambridge, Mass.

1898

In the Boston *Herald* of September 9, under the section of "People You Ought to Know," Mason Ham gives a character sketch of Roger Babson which is so true to life that we think it ought to be abstracted in these columns.

". . . In the first place, it is impossible that he should not have respect for his ability. As a young man he faced life under an almost hopeless handicap, and see what he has done. The Babson Statistical Organization at Wellesley Hills serves industries employing 2,000,000 people. It furnishes mercantile advice to business men who purchase between three and four billion dollars' worth of commodities a year. It supervises the private investment of about a billion dollars. And yet, the foundation of this great service was an 'incurable' case of tuberculosis. . . .

"When Mr. Babson was graduated from the Institute in 1898 he began at once to do statistical work for E. H. Kay and Company, a Boston bond house. A year or so later, suffering from a developed case of tuberculosis, he was ordered West by his doctor and told to stay out of doors and avoid exertion if he valued his life. . . .

"So Mr. Babson decided to get together a few bond houses, do his own statistical work in the woods and send reports to his various clients. Selling his project through the mails, he obtained a clientele of eight houses who paid him $12.50 a month each, making a gross income of $1,200 for Mr. Babson.

"That was the start. In 1902 he was allowed to move back East if he would continue living in the open air and select a sufficiently healthful community. He chose Wellesley Hills and settled with his wife in a little frame house with a sleeping porch; home and office in one.

"Ten years ago he founded the Babson Institute, an unusual business college for young men, which reflects many of the ideals and much of the personality of its founder. The campus in Babson Park is planned to be the perfect campus, never to suffer the growing pains of other universities. . . .

"Mr. Babson has written prolifically as a rather earnest avocation. His pen has produced eighteen books in all, not only on business methods and technique but also on ethics, religion, and the future of civilization. His latest book, 'Storing up Triple Reserves,' gives the reader advice on his financial, physical, and spiritual welfare. . . ."

Although William Lyman Underwood also owed allegiance to a much earlier class at Technology, he always identified himself with '98 and was very loyal to our Class. We have reason to be proud of him. An account of his death on January 28, 1929, and some comment on his career appeared in the March issue of The Review. It will be remembered that his work was done in bacteriological work as applied to the canning industry. With Professor Samuel C. Prescott he wrote "Science and Experiment in the Canning Industry." As a naturalist he was instrumental in having reclaimed the marshes of North Cambridge, and in studying trees, moths, and wild animals. His will left $20,000 for work in the Department of Biology and Public Health, with which Department he had been associated for thirty years. — ARTHUR A. BLANCHARD, *Secretary*, Room 4–160, M. I. T., Cambridge, Mass.

1899

From the Mississippi to the Atlantic, from Washington, D. C., to Boston, the boys came, forty of them, to the Thirtieth Reunion of the Class of '99 that was held June 14, 15, and 16 at The Griswold, New London, Conn. Some brought their wives and families, and some came alone. Some came for the whole three days, and some who could not spend the whole time came for the dinner on Saturday night.

There were arrangements for golf and bridge for those who wanted it, and for boating on the Thames. The golf prizes were captured by Tommy Lennan, Harold Graves, and Tim Kinsman. We had great golf, but it was a matter of regret to all that Tommy and Norman Rood couldn't take on any or all comers at the foursome as they planned as long ago as February last when they held a committee meeting of two in New York and issued the challenge. Norman planned to be present. He had made his reservations, but an eleventh hour telegram announced: "Rain prevented horse show with about ninety horses entered at our place last Saturday making necessary postponement until today. This prevents my attending Class Reunion much to my regret. Please remember me kindly to the other fellows." Miss Deborah G. Rood was among the riders and came out first in the ladies' jumping class on Captain Brandywine. No wonder Norman couldn't leave home.

Burt Rickards of Albany, N. Y., and George Lynch of Los Angeles, Calif., were attending the graduating exercises of their son and daughter respectively on June 15, and found it impossible to come to the Reunion. They could not have missed the graduations of their children any more than they could have missed their own from Technology.

The dinner on Saturday evening was the high spot of the whole Reunion. It was for that dinner that the greatest number assembled, some coming from Boston for it, and fifty-nine sat down at the table. Of the number, forty were members of the Class. Charlie Corbett read the list of members of the Class who had died and followed the list with the poem "Time Is the Weaver" by Hiram Moe Green, which we cannot reprint in The Review because of its length. Silence followed the reading of the names and the poem. Then all present drank a toast to the boys who had answered the last roll call, and from the lawn a bugler sounded taps. Many did not know the list was so extensive — fifty-eight in all.

Telegrams and letters of regret were read from Harry Mork, Norman Rood, W. E. Newell, George Lynch, Burt Rickards, Edward Hammond, F. C. Waddell, Hervey Skinner, and John Congdon. John's message read, "Sorry unable to be present but my heart is with you. May '99 be like modern grandmother, short on hair but long on brains." The Class of '09 celebrating its Twentieth, Reunion at East Bay Lodge, Osterville, Mass., telegraphed "Greetings and hearty congratulations to the Class of '99 on its Thirtieth Reunion," and '99, in turn, sent them a telegram of congratulations and greeting. A message of greeting was also sent to President Stratton and the Faculty of the Institute, pledging '99's loyalty and devotion.

Lawrence Addicks was toastmaster and, under the spell of his urging, Ben Hinckley gave a graphic description of the power of a railroad pass. Ken Blake nearly brought tears to the eyes of his classmates as he described his experiences during the five years he spent in Europe chauffeuring for Prince Henry of Prussia. Harry White told a most interesting story of his work on the state buildings in the State of Washington, and made '99 very proud of its architectural course. Alexander Holliday held his audience for twenty minutes with a talk on Egyptology, explaining in detail the work of Carnavon and the Fine Arts Museum-Harvard excavations under Dr. Reiser. David Churchill told the story of time and effort spent to produce an efficient handloom in India. He was finally awarded a gold medal by the Indian government for what he achieved. Handlooming in India is almost the life of the country, as 33,000,000 people out of a total population of 320,000,000 are engaged in it. Churchill finally worked up a handloom speed that compares favorably with that of power looms. The advent of India into the war brought these activities to an end, and on his return to this country, Churchill developed the

1899 Continued

handlooming of fine grade fabrics for women's wear, with headquarters at Berea, Ky.

William Parker told briefly a story of the oceanographic survey arranged for at Monaco by the International Hydrographic Bureau, at the meeting of which Parker appeared as a representative of the United States. Your Secretary modestly put in a plea for more news about yourselves, and the toastmaster commented crisply, saying that he did not think much of that as a story of the past thirty years. Neither does your Secretary, when it comes to that, but there will be other reunions, and I can tell my story then.

There was music during dinner, but after dinner there was group singing with George Perkins at the piano and Lew Emery leading. Lew delivered just as Walter Damrosch does when he holds the baton over the New York Philharmonica. The Class Book and *Technique* came in for a lot of attention, much of it mirthful, and the party broke up about midnight.

Members who attended were: Stanley Motch; Mr. and Mrs. Ross Hasbrouck and their daughter; Mr. and Mrs. Charles G. Barry; Edwin F. Samuels; Harold S. Graves; Charles W. Corbett; Mr. and Mrs. Walter C. Whitney; Mr. and Mrs. William E. Parker and their daughter; Benjamin E. Morse; Arthur H. Brown; Mr. and Mrs. W. Malcolm Corse; Lewis Emery; Mr. and Mrs. George H. Perkins; Mr. and Mrs. Kenneth M. Blake; Lawrence Addicks; Mr. and Mrs. David C. Churchill; Mr. and Mrs. Edwin A. Packard; Miles S. Richmond; Benjamin S. Hinckley; Mr. and Mrs. Maurice F. Richardson; Alexander R. Holliday; Thomas F. Lennan; Mr. and Mrs. Bernard Herman; Mr. and Mrs. Harry K. White; Mr. and Mrs. Frederic B. Stearns; Mr. and Mrs. Philip Burgess; Dudley M. Pray; Miles S. Sherrill; Etheredge Walker; William A. Kinsman; Mr. and Mrs. George H. Priest; Mr. and Mrs. Henry C. Eaton; Warren A. Priest; Frank J. Huse; Frederick A. Watkins and Frederick R. Sites. — W. MALCOLM CORSE, *Secretary*, 810 18th Street, Washington, D. C. ARTHUR H. BROWN, *Assistant Secretary*, 53 State Street, Boston, Mass.

1900

This coming year marks the thirtieth anniversary of the graduation of this Class and preparations are already under way for a monster Reunion some time in June. It behooves everyone, from the first year man to the possessors of degrees, who was associated with this Class to set aside the first part of next June for a few days of intensive get-together. Those of us who were fortunate enough to take part in the celebration of 1925 recollect with gratification the thrill of a twenty-five-year delayed hand-clasp. At that time all voiced their intention of repeating in 1930, so a likely nucleus is formed about which is to be built a very successful party. There have been some suggestions in regard to a thirty year book. As you know, we have had none since the Tenth Reunion. If enough information can be gotten together the Secretary will be glad to attempt the publication.

Edson, who was in Course II and is now chief smoke inspector of Massachusetts, published a very interesting interview in the Boston *Herald* of May 5 on Smoke Nuisance. — Last December Miss Margaret Elizabeth Hale, daughter of Mr. and Mrs. Charles A. Hale of Watertown, was married to Mr. George Warren Knight, son of Mr. and Mrs. Frank Perkins Knight of "Felseneck," Manchester. Their new home is 38 Holden Green, Cambridge.

Charlie Smith, Vice-President of the New Haven, is again in the limelight, having been appointed Head of the Department of Purchases and Stores, succeeding the late Vice-President Nathaniel M. Rice. This new job is in addition to his activities as engineering assistant to the President. Our own Charlie still wears the same size hat, however.

The following notice was received from Houlton, Maine: "Mrs. Vinal Bradford Wilson announces the marriage of her daughter Elaine to Mr. Horace Whitcomb Oxnard on Saturday, September 7, 1929, at Houlton, Maine." — During the summer, word was received of the resignation of Mortimer Silverman as assistant to President Hannauer of the Boston and Maine Railroad, to become chief engineer of the United Merchants and Manufacturers Corporation.

Some of the members do send in information, even if only in the form of changes of address. Word has been received from the following: Brock, Fitch, Perry, Clary, Pigeon, Blair and Collier. — C. BURTON COTTING, *Secretary*, 111 Devonshire Street, Boston, Mass.

1901

This letter will be a very brief one, as I am still on my working holiday (please note) at my summer home and am obliged to handle all of my clerical work by means of the Ediphone. I have just installed one of these this summer, as the result of the necessity which has arisen, and I am still attempting to master the technique. While for many years I have handled the greater part of my work by dictation and have become, shall we say, reasonably proficient in it, I find that when I am faced with this rapidly rotating black cylinder that all thought disappears, I stutter, stammer, and at times even there is a flow of saliva. Therefore, for all of the shortcomings of this brief missive I must crave your indulgence and beg you to be charitable. Some of you may have also attempted to can your voice and then have listened to the evil results of the same.

I should not write a letter at all but for one reason and that is, I want to say to every member of the Class how really pleased, touched, and gratified I am at the splendid response which has come in from members of the Class to my last letter. When I wrote my annual letter, which is sent out in the early summer, I called attention to the fact that we were still burdened with a small deficit. One of my classmates promptly sent me a check for the deficit, so that that was wiped out and is a thing of the past. From many others I have heard, both with financial donations and what is equally important, word as to their own doings or doings of some member of the Class.

For example, Charlie Auer wrote in to me early in the summer from El Paso, where he has been for many years, and stated that he had run across one of the Maderos or had had word from him. I wrote back to Charlie asking for further information, and I abstract briefly what he has written to me.

Emilio was a general in the Mexican Army during the first part of the Revolution. I think that the President Madero was a cousin if I am not mistaken, he may have been a brother, but of that I am not sure. In any case, Emilio was a general and in charge of four Mexican states. He saw a lot of active service and invited Charlie to take part with him. For reasons, however, which deal with international policy, Charlie declined the flattering offer. Whether Emilio is alive or not, I do not know. Charlie does not say, and my impression is that one of the Madero boys was killed during the Revolution. Charlie writes further, that Alfonso is somewhere in the States, where, at present, he does not know, but he is going to try to reach him and let us know what has become of Alfonso. Alberto Primitivo Gonzalez who was, I think, a cousin of the Maderos, is at Laredo, Texas. I gather that he also was embroiled in the recent disturbances in Mexico and that he has come to this more benign and gentle climate. Now that we have Mr. Hoover at the head I feel sure that we may count on having many of our wandering classmates return to these United States. I need not go into this matter further, I think. There is yet one more Madero to be accounted for, and I am hoping that Charlie will get on his trail. If by chance this letter reaches any of the Madero brothers I wish that they would write in and tell us something about the events of the past few years. They have been closely associated with very stirring events, and I know that all members of the Class will be very glad indeed to hear something of their whereabouts and what they are doing. Most of the men in the Class knew them, I think. They were rather striking figures particularly after Jack Scully made their acquaintance and introduced them to the Class.

Fred Clapp, that incorrigible soldier of fortune, has just sent in word of some of his later activities and I quote verbatim: "Frederick G. Clapp, petroleum engineer of Bronxville, N. Y., who, with his family, has been in Paris for the past year, has decided to remain there semi-permanently. In addition to his office at 50 Church Street, New York, he will maintain an office in Paris, the address of which is to be announced later. His temporary European address is c/o Bankers Trust Company, Paris. For the past six weeks Clapp has been specializing on advisory work in connection with Eastern Hemisphere oil developments. He

1901 Continued

was for one year in Australia, one full year in New Zealand, one full year in Persia and most of the past year in France. Recently he toured the south and west of France with his family. Clapp has joined the Geological Society of France, La Société Géographique (of Paris), the Institution of Petroleum Technologists (of London) and the Geological Society of London, in addition to the long list of American societies of which he has been a member for many years. In addition to geological and technical matters, he has been lately making a detailed study of the economic, industrial and political conditions affecting petroleum and other developments and opportunities for American capital in general in Europe and the Orient."

Word has just reached me that Austin Hyde has left the Baker Company in Milton, with whom he was for a number of years, and is now acting as division superintendent for the Calco Chemical Company at Boundbrook, N. J. For those of you who are wandering in that part of the world I may say that Austin lives at a house which is designated as Rural Free Delivery No. 2, Somerville, N. J. From that I gather that Austin has become as exclusive as Phil Moore although Rural Free Delivery has not quite that esoteric exclusiveness that pertains to a Private Road.

I shall save the rest of my budget of information for my future letters, and I hope that before this goes into print that I shall hear from many more of the Class. I cannot, however, close without once more expressing my very sincere appreciation for the splendid response that I have had from you all. The information concerning yourself and others, the help on the financial side, and more than anything else perhaps, the cordial expression of a desire for a Thirtieth Reunion, which encourages me to start in and form a committee and get busy on this at once. Practically every man who has written in has stated that he would like to come to the Thirtieth Reunion, and a large proportion of them have practically guaranteed that they will be there. I think we may count definitely on a gathering in the year 1931, and your Secretary and his associates in Boston will do all that they can to make the occasion a satisfactory one.

Again let me thank you all. You will hear from me when I am able once more to resume my normal channel of communication and not talk through a cussed horn. — ALLAN WINTER ROWE, *Secretary*, 4 Newbury Street, Boston, Mass. — V. FRANK HOLMES, *Assistant Secretary*, 250 Stuart Street, Boston, Mass.

1902

Classmates will learn with deep sorrow of the death of Edson Pollard at his home in Niagara Falls on June 24. While he had not been in good health for several years, he was seriously ill for only three weeks before the end. Pollard was born in Rutland, Vt., March 8, 1880, and came to Technology from the Rutland High School. He started in as a designing engineer with the F. R. Patch Manufacturing Company of Rutland immediately after graduation from the Institute, later becoming a salesman and, in time, director of the company. In 1912 he resigned to establish his own companies and develop some of the patents for quarrying machinery which he had taken out. He organized the Pollard Manufacturing Company of Niagara Falls, Ontario, and the Pollard Machinery Company of Niagara Falls, N. Y., being President of both concerns from their organization till the time of his death. He was active in many worthy interests in Niagara Falls, serving as President of the Rotary Club and in other organizations.

Pollard was a most loyal Technology man. He served as President of the Niagara Falls Technology Club, was one of the first classmates to become a life member, and the only one so far who has been taken from us. Few members of the Class were held in such warm esteem by everyone and he will be greatly missed. None of those who attended our Twenty-Fifth Reunion will forget his pleasant smile and the depth of his feeling as he renewed acquaintance with the many classmates there. Pollard never married. He is survived by his two sisters, the Misses Mary and Ruth Pollard, who lived with him at Niagara Falls.

Roland Pendergast was severely injured in an automobile disaster on the night of July 5. He was driving alone from New York to Washington in an open car. A few miles out from Philadelphia, the explosion of a tire caused the car to turn turtle and he was pinned underneath, receiving a very severe injury to his hip, in addition to less serious cuts and bruises. At his request he was taken by ambulance to the Johns Hopkins Hospital in Baltimore where he has been all summer. At this writing he is much improved and is leaving this week for Washington where his headquarters will be at the Racquet Club. While at present he is still on crutches, the doctors have assured him that eventually he will recover the full use of his leg. Pendy's presence of mind in throwing himself down behind the dashboard as the car turned over, probably saved him from much more serious injury, if not death.

Frank J. Eager has been appointed assistant superintendent of operations at the Frood Mines, Sudbury, Ont. For the past fifteen years he has been with the Mond Nickel Company at Coniston and later at Levack, Ont.

The Class of '02 has an additional member on the Technology Faculty this year; Hunter, the Class Secretary, is giving courses in the Department of Building Construction (Course XVII) on Estimating and Quantity Survey. — FREDERICK H. HUNTER, *Secretary*, Box 11, West Roxbury, Mass. — BURTON G. PHILBRICK, *Assistant Secretary*, 246 Stuart Street, Boston, Mass.

1904

Naturally the major item for this month's issue must be some account of the Twenty-Fifth Anniversary of our graduation from the Institute, the celebration of which took place on June 6, 7, 8, and 9, 1929. The account of the Anniversary given herewith was furnished the Secretary by Gene Russell and the Secretary does not vouch for its correctness.

The celebration opened on Thursday, June 6, with a golf tournament in the afternoon at Brae Burn Country Club. This course will be remembered by golfers as the one on which the National Amateur Championship was played in 1928, which was won by Bobby Jones. There were eleven members of the Class who endeavored to better Jones's record. The best gross score was that of Tammy Rockwood, who failed to equal Jones's score by 25 or 30 strokes, Tammy's best being 95. Next to Tammy was Dave Sutton, who scored 98, but this being Dave's home course, the historian feels that Dave should have done better. The best net score was made by Charlie Haynes, who, subtracting a handicap of 24 from his gross of 99, got a net of 75. The next best was that of Bob Dennie, whose handicap of 42 reduced his wonderful score of 121 to a meager 79. Suitable prizes consisting of golf balls were awarded to these valiant golfers.

As soon as all the golf players straggled in from the course we sat down to a very fine dinner at which thirty-one were present. After dinner several tables of bridge were arranged, and those who enjoyed cards passed a pleasant evening at these tables. The ladies' prizes were won by Mrs. Philip Sweetser and Mrs. Hiller. Charlie Haynes maintained his perfect average by taking the first men's prize at bridge while the second went to none other than Mert Emerson. Those who did not dare to play cards passed the time in reminiscences and other forms of entertainment after the usual custom on such occasions. Those present at Brae Burn were as follows: Mr. and Mrs. Blum, Bob Dennie, Bill Eager, Mert Emerson, Mr. and Mrs. Hartshorne, Charlie Haynes, Guy Palmer, Mr. and Mrs. Rockwood, Frank Severy, Mr. and Mrs. Sutton, Mr. and Mrs. H. K. Richardson, Gus Munster, Albert Ferry, Mr. and Mrs. Parker, Mr. and Mrs. Hiller, General Holcombe, Mr. and Mrs. Hayward, Mr. and Mrs. Phil Sweetser, Steve and Mrs. Stevens, Fred Anderson, George Shaw, and the writer, Gene Russell, and Mrs. Russell.

Friday morning, so far as the writer knows, was spent in individual trips about the city, doing one thing and another as may have pleased each one's fancy. At one o'clock luncheon was served at the University Club at which twenty-five members and wives were present. At the conclusion of luncheon automobiles were brought to the door and everybody started for East Bay Lodge at Osterville. Arrival there found Steve and Mrs. Stevens waiting to welcome the crowd. The salute of Jupiter Pluvius, without which no '04 Reunion is complete, was delivered at five o'clock in the form of a terrific downpour which lasted several hours. Inasmuch as outdoor sports were not planned for Friday evening this

1904 Continued

was probably as good a time as any for old Jup to do his stuff, as it did not interfere with anybody's pleasure. Friday evening another bridge party was held and the ladies' prizes were won by Mrs. E. H. Russell, Jr., and Mrs. Harry Kendall, while the men's prizes were won by Tammy Rockwood and H. K. Richardson. Preceding dinner and during the evening refreshments were served under the direction of Davé Sutton, assisted by Bob Dennie. Their efforts were much appreciated.

Saturday was the big day of the anniversary celebration as it was during the day that the maximum number was present. A golf committee, under the able leadership of Dave Sutton, had arranged for a tournament to be played at which a silver cup was offered for the Class championship and suitable prizes, consisting of golf balls, were presented for the best gross and net scores during the morning and afternoon rounds, as well as for the combined score of the two rounds. The tournament was played on the new eighteen-hole course of the Oyster Harbor Club. Twenty-one men and three ladies entered the tournament, and while no records were broken, a great deal of exercise and satisfaction was had by the participants. The cup for the class championship was awarded on the basis of morning and afternoon rounds and went to Al Read whose score was 187.

For the morning round the best gross score was by Dick Hartshorne and Dave Sutton, who tied at 87 each; next was Tammy Rockwood with 102. The best net was won by Harry Stevens, our amiable Secretary, with a score of 69. This was accomplished by very clever work on his part in selecting a handicap of 78, which arithmetical processes will show when subtracted from a gross of 147 produces a net of 69. Harry states that he was entirely honest in his selection of the handicap. Next was Mert Emerson with a net of 76, and third Earl Cunningham with 77. The morning round apparently was too much for a good many of the participants because the afternoon round was not nearly as thickly populated. Consultation by the Committee showed that under a rule that no person could get more than one prize it was useless to attempt to award prizes for the gross scores in the afternoon. Cy Ferris had the best net with 72, Guy Palmer being next with 76 and Everett Hiller third with 81. Cy's handicap was 45, Guy's was 45 and Everett's was 38. Therefore, it is evident that anybody had a chance to win a prize.

For the combined scores for the morning and afternoon rounds first gross prize went to Mark Magnusson with a 192. Second went to Bill Eager with 194. The best net for the combined rounds and the first prize went to General Holcombe who got a 154, second went to Harry Kendall with 167 and third to Bob Dennie with 168. The ladies playing were Mrs. Chic Emerson, Mrs. Hartshorne and Mrs. Read. Mrs. Emerson took the prize for the best gross with Mrs. Hartshorne second, while Mrs. Read had the best net score.

The golf committee, consisting of Dave Sutton, Chairman, labored long and arduously on the arrangements for this tournament, and the work of tabulating the scores and awarding the prizes nearly finished Dave, but the appreciation of the players was the only reward he got.

During the afternoon the ladies gathered at the Oyster Harbor Club for afternoon tea and bridge at which prizes were won by Mrs. Sutton and Mrs. Hiller. This function was primarily intended for the ladies alone, but when the writer accompanied by Phil Sweetser and Harry Stevens staggered off the golf course in search of the tea party they found that a number of rugged men including Dan Comstock, Earl Cunningham and several others whose names escaped the scribe, had horned in on the party and were consuming vast quantities of tea, ice cream and cake. This is not in any way intended to disseminate the idea that these fellows are cake eaters.

During the afternoon while the golf tournament was in progress Frank Severy wandered around the wild country surrounding the golf course. During his tour he succeeded in capturing a mud turtle about fifteen inches in diameter which he promptly adopted as mascot for the remainder of the celebration. He was unable to find any red paint, so he inscribed the class numerals in yellow paint on the turtle's back and attached a leash to the turtle and delivered it to the custody of Mrs. Stevens, somewhat to her discomfort as the turtle was a very lively customer.

Upon the arrival of the golf and bridge players at East Bay an attempt was made to take a group picture. The arrangement of the group devolved on the Secretary, and it was indeed an interesting sight to see Harry endeavoring to get the crowd together. It reminded the onlookers of a fussy old hen trying to gather its brood of chickens into one spot. After a long struggle, at approximately 7:10 P.M., when the light was failing fast, fifty-two out of the fifty-five present at the Reunion were arranged and the picture was taken. In spite of the late hour it was a great success.

After dinner Saturday evening the function which has come to be known as the annual meeting of the Class was held. There being no business of any moment to transact at the meeting, the principal features were the report of the Secretary and the reading of letters from the members who were unable to attend. From the Secretary's report it was apparent that approximately 350 notices were sent out regarding the Anniversary Celebration. From these notices replies were received from sixty-two regretting their inability to attend. Thirty-seven were present. This made a total of ninety-nine replies received to the 350 notices which were sent out. As each notice bore a return card in the corner of the envelope and as the Secretary received only two which were undeliverable, it is assumed that the balance had no interest in the Twenty-Fifth Anniversary Celebration. It was the consensus of opinion of those present that those who had no interest in it had no idea of what they were missing.

This was the first reunion in the history of the Class when the wives and families were included in the invitation. There were seventeen wives and one son present. The thirty-seven members of the Class who were present included two coeds, Mrs. S. P. Williams (Frances Ropes) and Mrs. George H. Keith (Linda Frazer).

The reading of the letters from the absent classmates and discussion of various questions that arose as a result occupied the time until about 10:30 P.M., when Mert Emerson arose and inquired if the Secretary had anything more to say. Harry immediately admitted that he had used up all the ammunition in his locker and that as far as he was concerned the class meeting was at an end. Whereupon Mert Emerson announced that he had a few words to say himself. He then proceeded to express the appreciation of the Class for the efforts of the Secretary and finished his remarks by presenting Harry with a very handsome diamond ring. This episode knocked Harry for a loop, as the boys say, and rendered him speechless. To cover up his embarrassment Gus Munster arose and in his usual facetious way also presented Harry with a new automobile, stating that he was tired of seeing Harry riding around in an open car and thought it time that he had a closed one. This relieved Harry to some extent, so after he had put the automobile into his pocket he was able to collect his scattered senses and attempt to thank his classmates for the very beautiful gift which they had given him. This closed the formal events of the evening and the crowd retired to prepare for the following day.

Sunday was no different from the last day of any other reunion. Everyone occupied himself as best pleased him and more golf was played during the forenoon. Some were obliged to leave for home Sunday morning, and immediately after dinner the remainder rapidly slipped away and the Twenty-Fifth Anniversary was over. It was a very pleasing affair and all those present enjoyed themselves to the utmost, feeling that the presence of the ladies had contributed in a large measure to the success of the occasion.

The roster of those present follows: Bernie Blum, Earl Cunningham, Bob Dennie, Bill Eager, Mert Emerson, Cy Ferris, Hump Haley, Dick Hartshorne, Linda Frazer Keith, Harry Kendall, Mark Magnusson, Guy Palmer, Tammy Rockwood, Frank Severy, Dave Sutton, Reg Wentworth, Frances Ropes Williams, H. K. Richardson, Gus Munster, Chic Emerson, Ed Parker, Everett Hiller, Walter Keen, General Holcombe, Ernest Rupf, Phil Sweetser, Harry Stevens, Dan Comstock, Herb Goddard, Al Read, Ralph Ingram, A. D. Smith, Shorty Holbrook, Charlie Stebbins, Bob Phinney, Hubert Merryweather, and the scribe, Gene Russell. The wives present were Mrs. Blum, Mrs. Dennie, Mrs. Hartshorne, Mrs. Kendall, Mrs. Rockwood, Mrs. Sutton, Mrs. Richardson,

1904 Continued

Mrs. Chic Emerson, Mrs. Parker, Mrs. Hiller, Mrs. Keen, Mrs. Russell, Mrs. Rupf, Mrs. Stevens, Mrs. Goddard, Mrs. Read, and Mrs. Merryweather. Herbert Goddard brought his son with him.

The balance of the Class Notes are written by the Secretary. He wishes to express his deep gratitude and appreciation of the action of his classmates in presenting him with a diamond ring at the Twenty-Fifth Anniversary. It has become one of his most cherished possessions and serves as a constant reminder of the esteem of his classmates. Subsequent to the Reunion another token of the esteem of the Class was presented to Mrs. Stevens in recognition of the hard work which she had put in in arranging for the events of the Anniversary in which the ladies participated. Mrs. Stevens takes this opportunity of expressing her thanks and appreciation to the members of the Class.

There remain only two other items of interest to be included in these notes. On June 17 John Howard Draper, Jr., was married to Miss Catherine Childs Lawry in the home of her parents in Fairfield, Maine. Of course John, Jr., is the son of our own Jack and is the second one of Jack's children who has entered the bonds of matrimony. John, Jr., was graduated from Technology in the Class of '28 and is at present associated with his father at the Draper Mills in Canton, Mass. Jack was one of those old standbys who were unable to attend the Anniversary Celebration and his presence was sorely missed by the rest of us. — Mert Emerson sailed for Europe on September 15 on a trip of combined business and pleasure. He expected at that time that he would be gone about six weeks and to return to the United States along about Thanksgiving.

The Secretary faces the future with the renewed hope that this is the year when the classmates are going to write him a lot of letters with class news in them. — HENRY W. STEVENS, *Secretary*, 12 Garrison Street, Chestnut Hill, Mass. AMASA M. HOLCOMBE, *Assistant Secretary*, 3305 18th Street, N.W., Washington, D. C.

1905

An interesting report arrived the last of May from Dick Senger: "I am now back to work, after spending a few weeks in Spain. The trip was well worth while. For you fellows back East, a little jump across the ocean is nothing. For me, in Utah, it means three days and three nights traveling to the eastern seaboard, not to mention all preparations which inconveniently must be carried on by correspondence, instead of visiting an agent in an office.

"From New York I sailed on the Spanish Royal Mail Line S. S. *Magallanes*, and landed at Cadiz. From there I motored to Algeciras, hopped over to Tangier, then motored from Algeciras to Seville. Took in Granada, Madrid, Barcelona, the Balearic Island of Majorca, crossed France, spent three days in Paris, and went down to Cherbourg to catch the *Olympic* for the return voyage.

"Now that I look back, I can truly say that my knowledge of Spanish learned in Mexico was instrumental in giving me more than half of the pleasure of visiting Spain. The Spanish people are quite different from other people I have met. They have individuality, character, personality, humor, a peaceful philosophy of life, no modern nerves, and they know how to mind their own business. Possibly the lack of nerves makes them so attractive. I made that remark after seeing Raquel Meller, the famous Spanish actress, perform in Paris. Friends who were with me agreed that probably her chief charm was just that.

"The treasure of the Catholic Church in Spain is phenomenal. While I cannot appreciate it from an artistic standpoint, it interested me greatly. I have seen tons of silver and gold ornaments, pounds of jewels, thousands of paintings, the money value of which would mount to hundreds of millions of dollars, and I have seen only a small part that the Spanish Catholic Church possesses." This is the first of a series of travelogues by Richard W. Senger. The next will appear in an early number.

Dan Harrington, general manager of the dyestuffs division, has been elected Vice-President of E. I. du Pont de Nemours and Company. — Miss Jeanne Marcy appeared in the family of the former Secretary on July 12. — We received a message in July from Herb Wilcox from Prince Rupert, B. C.: "Just en route to Los Angeles via Skagway, Alaska. Great sea voyage through the mountains." — It was easy to identify Bob Folsom's daughter in a photograph of a group of Reading Junior Club members which appeared in the papers. — Albert H. Smith has left Frank Payne's company and is with S. G. Garraway and Company, 208 South LaSalle Street, Chicago. — Ed Poor's Hygrade Lamp Company, Salem, has been granted a license by the Radio Corporation to manufacture both A. C. and D. C. tubes.

Walter Brown writes that the connection between Holstein-Friesian cattle and the New Jersey Zinc Company is about thus: "Sold farm and spent several months with Professor Locke forgetting 'bugs' and remembering ores; then several years with New Jersey Zinc Company of Pennsylvania at Palmerton, Penna.; then several years manager of wholesale and retail automobile business; now back with New Jersey Zinc Company in New York. Farms and automobiles fine as playthings — as income producers, not so hot."

Bob Lord and his brother have organized the Lord Brothers Leather Company, with tanneries at Woburn, Mass. Work was started in August. Both were formerly with the Widen Lord Leather Company, Danvers. — Sid Strickland scored again in the feature article in the July *Good Housekeeping* on a summer camp at Chesham, N. H. — Charles Field, 3d, formerly with the National Airline and Chemical Company at Buffalo, is now in Norfolk, Va., at 7409 Gleneagles Road. — Bertrand L. Johnson is the author of a report issued by the Bureau of Mines on "Phosphate Rock in 1927." — On July 1, Ros Davis took over the office of Assistant Treasurer of Wesleyan University, the resident financial officer. He continues his former work. — The Edison prize youth is going to Technology to take Doc Lewis's Course X.

Fred Pirie says he doesn't get very far from Nahant, but runs across Fuller and Prichard once in a while. — Grove Marcy's boy, Dick, went with the Boy Scouts to Denmark and the Jamboree in England last summer. Grove says: "Dick enters Technology in the fall. He and I went over and attended to the final formalities yesterday. Sort of wanted to start over again myself." — Elmer Wiggins was married on May 11 to Miss Margaret Anne Stone in Kansas City. They are at home at 87 Columbia Avenue, Edgewood, R. I. — Mitchell Mackie has stepped from Waukesha, Wis., to 85 East Michigan Street, Milwaukee.

One of our secret agents in Boston inquired: "Was Grafton Perkins, as an undergraduate, ever subject to fits of impatience? Even if he were not, you may be interested to hear that he is today on the trail of a method by which the broiling rate of lobsters can be increased. This I know because I saw him the other night at Durgin and Parks and could not help overhearing the disturbance he created because he had to wait longer than he deemed necessary to prepare his order. He finally got it and seemed to relish the food, even though I feared the delay might be too much."

And now comes another installment from the pen of the well-known adventurer, Frank Payne: "Leaving Kobe, 8:00 in the morning, a beautiful day, we passed through the inland seas of Japan. In some places you could almost reach out and touch the shore, yet plenty of water was always available. The China Sea, where the great typhoons are to be found, was as calm as a mill pond — quite different from what we expected.

"At Shanghai I think I saw ninety to one hundred ships loading and unloading to and from all parts of the world and the river filled with French, British, and Italian warships lying at anchor, holding themselves in readiness. Never was I more surprised in my life to find such an array of large modern office buildings as one finds on the Bund. Automobiles of every make and description, American principally, in service, are fast replacing the rickshaw. Outside of Shanghai, the white man is not so welcome. Power plants are now being taken over by the China Government and operated by their own people, with the result that they have lights only about half the time, and when anything happens the Chinaman is helpless. They tell me they are without doubt the worst mechanics in the world. Without the protection of the British and the American warships in the harbor, property would not be worth a nickel.

"Hongkong was the most beautiful spot I have ever seen, outside of the harbor of Rio. The British have made this a charming place to spend a few days. —

1905 Continued

Thank goodness with me it was only a few days. There were just as many ships loading and unloading in Hongkong as at Shanghai and the sight of the cargoes carrying up and down the river and along the coast was an 'eye opener.'

"Three days from Hongkong and you are in Manila, an American possession. Heat terrific at midday, but cleanliness at once evident. I ran across a Technology man, Gore '16, in a business way. These chaps all seem quite content. There is plenty of business. I called at Cavite, after a wonderful thirty-mile drive, and met Captain Furer '06, naval constructor in charge." This is the second of a series of travelogues by Frank E. Payne. The next will appear in an early number.

There are others who have taken interesting trips. We shall smoke them out if it takes all winter. — ROSWELL DAVIS, *Secretary*, Wes Station, Middletown, Conn. SIDNEY T. STRICKLAND, *Assistant Secretary*, 20 Newbury Street, Boston, Mass.

1906

The Secretary has received a copy of the *Bulletin* of the Engineering Society of Hawaii. Bill Furer writes that he gets this out every week. Bill also sent a schedule of the entertainment program for the American delegates to the World Engineering Congress who will be in Honolulu on October 16 and 17. The following note was written on the corner of the program: "This sort of stuff is keeping me pretty busy these days. We are going to entertain about 300 engineers on those two days in October and we will have our hands full. I wish I could find an '06 man in the passenger list."

M. W. Hayward III has been appointed consulting engineer for the Compania Minera de Penoles, Monterrey, Mexico. He will continue to have supervision over the geological department of that company. — E. S. Bardwell III, who is superintendent of the copper refineries at Great Falls for Anaconda copper, recently addressed the Montana Society of Engineers on the topic, "The Refining of Copper."

Charlie Wetterer has forwarded a letter from Herman Henrici which includes the following: "I was in New York a few weeks ago and ran into Orville Denison. My program is always so irregular that I do not know when I will be there again, but I would like very much to have a chat with you. I am hoping that in some way or other we might get you to come out in this direction and give us a chance to visit with you here. Give my regards to any of the '06 men you see."

The Boston *Herald* has been running a series of articles under the caption of "People You Ought to Know." Eleanor Manning was the subject chosen for July 9. Accompanying the write-up was a large picture of Miss Manning which was not particularly good. It is impossible to reproduce all the story here, but parts of it are given below: "Miss Eleanor Manning, one of Boston's leading woman architects, was born and has spent most of her life in Lynn. She earned the degree of Bachelor of Science in architecture from the Institute, and was the only girl studying architecture in her Class. Miss Manning is one of the six women who belong to the American Institute of Architects, which has a membership of over 3000. She is also Secretary of the Massachusetts Federation of Planning Boards, member of the Lynn Planning Board; member of the house committee at the College Club and chairman of the furnishings committee, and a member of the board of the Altrusa Club.

"Beside these manifold activities, Miss Manning finds time to teach. She gives at Simmons a course called housebuilding, designed to teach girls to be intelligent clients for home builders. She also gives the same course at Pine Manor. An active hobby is that of Miss Manning — mountain climbing. She is a member of the Appalachian Mountain Club, which sponsors a long walk each Saturday, the year around, besides interesting itself in other forms of outdoor activity. She goes every winter for a week to one of the camps which the Club maintains, and hopes some time to join one of its walking tours through the Alps or in the mountains of the West.

"Miss Manning is most enthusiastic about her work and declares that she never plans to retire. With her it is not a question of stopping work to have time to enjoy life, for she declares that you can be a doddering old lady and still do architecture."

Max Coe II has been appointed as general manager of the Stanley Rule and Level plant. In this connection, the following is taken from the New Britain *Herald* of last March: "Mr. Coe is a native of Omaha, Neb., where he received his early education. He was graduated from the Institute in 1906. In 1907, just twenty-two years ago, he entered the employ of the Stanley Rule and Level Company. In September, 1910, he was sent to the mechanical plant operated by the company at Roxton Pond, Quebec, as department supervisor. When the Stanley Rule and Level Company bought the Atha plant at Newark, N. J., Mr. Coe was sent there and in July, 1913, became its superintendent. In 1922 he returned to New Britain as assistant to J. M. Burdick, general superintendent. Since that time he has gradually been adding to his duties and responsibilities at the Stanley Rule and Level plant, until his appointment yesterday. The appointment was expected by most of those who were familiar with the plans of the company. Mr. Coe's promotion came at a time when he was ill at his home on Liberty Street, where he has been confined for almost two weeks with an attack of grip."

Classmates will be sorry to hear of the death of John Monaghan, who passed away on Monday, April 29, in Boston. The following obituary is taken from the Boston *Evening Transcript* of April 30: "John E. L. Monaghan, prominent civil engineer, died yesterday at the City Hospital after a brief illness. He made his home with his family at 200 Hyde Park Avenue, Forest Hills. Mr. Monaghan was a district engineer in the sewer division of the Boston Public Works Department for many years and was identified with some of the largest sewer construction projects in the city. He was a member of the Boston Society of Civil Engineers, Past President of the Municipal Engineers Association of Boston and vicinity, and a member of the Boston Lodge of Elks and an officer on the degree staff. He also held membership in the Forest Hills Improvement Federation, Forest Hills Club, and Forest Hills Athletic Association.

"He attended English High School and was later graduated from the Institute with honors. He served as a member of the old Common Council from Ward 13, South Boston, in 1900 and 1901. He is survived by his wife, formerly Mary Kearns, and three children: Pearl Monaghan, a high school teacher; Russell Monaghan, connected with Stone and Webster and Blodget; and Melvin Monaghan." — JAMES W. KIDDER, *Secretary*, 8 Harrison Avenue, Boston, Mass. EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills, Mass.

1907

The Rochester, N. Y., *Democrat and Chronicle* of June 8, announces the promotion of M. Herbert Eisenhart to be general manager of the Bausch and Lomb Optical Company of that city. Eisenhart has been Vice-President of this company for several years, and in his new position succeeds Mr. Edward Bausch, who has resigned as general manager but retains his place as President. The company's plant occupies twenty-four acres of floor space, and employs 3,500 persons. In announcing the promotion of Mr. Eisenhart to the general managership of the company, the Board of Directors made this statement to the employees of the company:

"Since December, 1917, Mr. Eisenhart has been closely associated with Mr. Bausch, from whose ripe experience and counsel he has greatly benefited. It is a source of satisfaction to Mr. Bausch to know that his successor is so well qualified to carry on the policies and high ideals which have dominated the management of the company in the past." Eisenhart is President of The Technology Club of Rochester, and is active in various local civic affairs.

The *Colombian Trade Review* of London in its May, 1929, edition, contains the following item: "Mr. Edwin James, a motor-road expert, has been appointed by the Colombian Minister of Public Works as a member of the National Communications Committee. He was recommended to the Colombian Ministry by the United States Department of Commerce, and his qualifications and experience, as may be seen from the following, leave nothing to be desired. In 1901 he received honorary mention at Harvard University, having previously studied civil engineering at Phillips Exeter Academy; from 1905 to 1907 he studied at the Institute of Technology in Massachusetts; he was an engineer in the Office of Public Works in Manila (Philippines), being appointed a motor-road engineer in 1910, and occu-

1907 Continued

pied the position of chief inspector-in-charge in 1913; in 1914 he was head of the Division for the Maintenance of Motor Roads, and in 1916 was inspector-general. He was assistant-engineer in 1919, and in 1921 was chief of the drawing office of the Roads Construction Department in the United States. He is a member of various societies, such as the American Society of Civil Engineers, American Association of State Highways, Washington Society of Civil Engineers; also he was technical counsellor to the American Delegation at the Roads Traffic Conference in Paris in 1926, and he has also been the representative of the United States Office of Public Ways on various occasions for the purpose of working in cooperation with various Governments in the States. He is the author of many scientific works. Mr. James has already arrived at Bogota."

Possibly the most interesting piece of news we have is the announcement of the marriage of our Class President, Alexander Macomber, which took place on August 15, 1929, in Trinity Church, Boston. In spite of the rather intimate friendship which we have enjoyed with Mac for the last twenty-five years, we knew nothing of the event until announcement of the wedding reached our home. Mrs. Nichols's greeting on our arrival home from business was, "I have a real surprise for you," and surprise indeed it was.

Mrs. Macomber was Miss Ora Alfrieda Terry of Stoneham, Mass., and Washington, D. C. An extended trip abroad followed the wedding, visits being made to Paris, Stresa and the Italian Lakes, Venice, Vienna, Prague, Budapest, Dresden, and Berlin. Mac will live in Boston, Mass., his business address being 35 Congress Street in that city, where he is a member of the firm of Macomber and West, consulting engineers.

As you probably all know, Mac has been President of the Alumni Association and is now a member of the Corporation of the Institute. He served throughout the World War as Major and Lieutenant Colonel of Engineers, seeing active service in France. He is well known in public utility fields, being President of the Association of Massachusetts Gas Companies, and an officer and director of several gas and electric companies of New England.

From Kenneth Moller II comes the following letter: "As you suspect, I have returned to Boston, and I hope, for keeps, as it is certainly a delightful place in which to live and work. I have my own company, which I call the Textile Patent and Process Company, with offices at 263 Summer Street, and I intend to devote my declining years to the development of new machinery, equipment and processes for the textile industry. As you doubtless know, it is the second largest industry in the world, and yet one of the most old-fashioned, with a real chance for improvement in the processes in vogue today.

"I have taken a house in Milton, at 366 Adams Street, which is very near my old home, and am looking forward to being a little bit more intimately connected with Technology affairs than has been possible in the past." — BRYANT NICHOLS, *Secretary*, 2 Rowe Street, Auburndale, Mass. HAROLD S. WONSON, *Assistant Secretary*, Int. Shoe Company, Manchester, N. H.

1908

The first bi-monthly dinner of the 1929–30 season will be held on Tuesday, November 12, at Walker Memorial at 6:30 P.M. as usual. Reply postal cards will be sent out and an early reply will be much appreciated.

Capt. George Westervelt, who retired a year ago from the United States Navy, is associated with Curtiss-Caproni Company, Inc. This company was recently organized to manufacture large seaplanes. — Leo Loeb, formerly Vice-President of the National Electric Power Company has become Vice-President and Treasurer of the North American Gas and Electric Company.

Can anybody give any information regarding address of the following? Mail has been returned from the last address which we had: Harold C. Faxon, Samuel H. Salisbury, George Schobinger.

Walter H. Byron is now located at Weston, Mass., while Frank K. Belcher reports his new address as 309 North Michigan Street, DePere, Wis. — Lawrence Allen is now at 742 Thayer Avenue, Silver Spring, Md. — Philip J. Hale has returned to Youngstown, Ohio, and is located at 28 West Jeanette Drive. — John T. Ellsworth may be reached care of American Zinc Lead and Smelting Company, East St. Louis, Ill. — The address of Frank E. Ludington is P. O. Box 885, Waterbury, Conn. — Lynn A. Loomis is at 14 Arnold Park, Rochester, N. Y. — Major John H. Caton, following a short stay at Providence, R. I., has returned to Bucaramanga, Colombia, South America, care of Winston Brothers Company. — Viggo E. Bird is located at 36 Pearl Street, Hartford, Conn., care of Connecticut Light and Power Company. — George M. Dexter is at Heathcote Inn, Scarsdale, N. Y.

We were interested in receiving the following letter from Putnam and are glad that plans for the Twenty-Fifth Reunion are already being discussed in the West: "I appreciated very much your dropping in to see me on your visit to Dayton last spring, and was sorry to miss you. Now that June has come again, the memory of last year is more vivid in my mind than ever, and I wish that I could look forward to meeting the gang in another two weeks. I enjoyed myself more at the Reunion than I have in many a long day, and I cannot imagine staying away from another one in the future. The spirit of comradeship which prevailed, in spite of the fact that many of us had not met since our college days and then in most cases only in a casual way, was a revelation to me. I was on the Cape again later in the summer, and when I drove past West Bay Inn it made me feel homesick for the crowd. George Glover had dinner with me once during the winter, and most of our time was spent enjoying those days again; the rest of it in planning for 1933. I hope that if you are in Dayton in the future, you will be sure to make me a visit. Give my greetings to the fellows when you see them." — HAROLD L. CARTER, *Secretary*, 185 Franklin Street, Boston, Mass.

1909

The Twentieth Reunion was a great success. The weather was perfect from start to finish. East Bay Lodge is an ideal place at which to have a reunion, and thanks to the work of Jim Finnie and his committee, the attendance far exceeded all previous records. This is as it should be, and five years from now we should expect that at least a hundred of us would get together for our Twenty-Fifth.

Naturally, the larger percentage came from the eastern seaboard, but other parts of the country were well represented. The long distance record went to Healy and his wife who came on from Milwaukee, Wis., where Healy is technical superintendent of the plant of the Fisk Rubber Company. Tom Black from Chicago was a close second. Jack Moses, who can always be counted upon when anyone mentions a class reunion, came from Birmingham, Mich., bringing his wife and two sons. From Pittsburgh came Mollie Scharff, and from Pottstown, Penna., King Bullens and his wife, while Bill Kelly represented the Quaker City. Fred Faulkner, who is teaching at the Nova Scotia Technical College at Halifax, kept his record of attendance unbroken. New York was represented by the William Duncan Greens and their two youngsters, Max Weill, Jim Critchett, Chet Pope and Mrs. Pope. Howe, who is in the engineering department of the Electric Bond and Share Company in New York, was with us for the first time, and says he will never miss another reunion. On arriving at Fall River the rest of the bunch left Paul Wiswall sound asleep on the New York boat, but Paul showed up, nevertheless, having spent most of the forenoon riding around Massachusetts in an effort to get a train connection for the Cape. Mr. and Mrs. Reg Jones were also with us again this year. R. L. is with the Bell Telephone Laboratories in New York. Tug Wilson and his wife came on from Mount Vernon, N. Y.

From Providence came Bert Thornley and Howdy Fisher and his wife. Boston now claims Jim Finnie, who for some time past resided in Pawtucket. Cy Young was with us too, being the sole representative of the old whaling city of New Bedford, where he runs the Acushnet Process Company, manufacturers of various kinds of rubber goods. Gidley and his wife represented Fairhaven, Maine, while Frank Lange, his wife, and Frank, Jr., were on from Springfield, Mass. Mr. and Mrs. Chic Shaw, who with Jim Finnie and Edith celebrated the last reunion by themselves, were not disappointed this year in the attendance. Bob Smith and Mrs. Smith, from Winchendon, were with us again.

1909 Continued

Bob Keeney came from Hartford, Conn., where he is associated with the Connecticut Light and Power Company.

The Boston contingent was out in goodly numbers, many of them with their wives and some with their children. George Haynes's older daughter, Muriel, has grown up, since we first knew her, to be a charming young lady, and Art Shaw's boys are big enough to give the old man a pretty good rub when it comes to tennis. Mrs. Shaw was with us, too. Royce Gilbert and his wife brought their daughter, Doris, with them for the first time, and we all fell in love with her. The Gold Dust Twins, Chet Dawes and Johnny Davis, came, as we always like to have them, with their wives. Horace Clark and Mrs. Clark, Benny Dow and his wife, Carl Gram and Mrs. Gram, Charlie Main and his wife, Channing Turner, George and Mrs. Wallis, John Willard and Mrs. Willard, Mr. and Mrs. Laurence Winchester, Heine Spencer, and Mr. and Mrs. Charles Freed, were among those arriving from the Boston district.

There were many others who had planned to be present, but were prevented by one thing or another at the last minute. We missed each of them and hope that five years hence it may be possible for them to be with us. One of the most pleasing things about the Reunion was the hearty financial support given the committee by many who cheerfully sent in their contribution, knowing that it would be impossible for them to be present. Such support was very much appreciated by the committee.

Telegrams were received from Francis Loud, Phil Chase, Delos Haynes, and a cable from Tom Desmond, who was then in Sao Paulo, Brazil, sending greetings and best wishes. Greetings were also exchanged by telegraph with the Class of '99, who were at the same time celebrating their Thirtieth Anniversary at the Hotel Griswold at New London, Conn.

By Friday evening, June 14, about twenty-five to thirty of us had gathered at East Bay Lodge, and Carl Gram and George Wallis who had charge of the entertainment put on a bridge party for mixed couples, while upstairs the gang opened up with the usual poker party. Some say Jim made expenses the first night, but there seems to be no way to prove it. Anyhow, Bill Kelly had a good time, win or lose. Bill's presence added much to the success of the Reunion, and we hope we can get him on from Philadelphia, or wherever he is, for the Twenty-Fifth. To get back to the bridge party, which was the official function of the evening, Mrs. King Bullens showed us all how they do it in Pottstown, and took the ladies' first prize, although Mrs. Main was not far behind her. Smut Nisbet took the men's first prize, second place going to Chet Dawes. Mrs. Gram and Mrs. Wallis selected the prizes, which were very attractive.

Saturday morning found most of the crowd at Craigville Beach enjoying the excellent bathing which that beach affords, while others visited at the Lodge, or played golf on the Oyster Harbor course, the privilege of playing on which was very kindly extended to us by the management. Cy Young won six golf balls for the low gross golf score, having made 87 on this difficult course, which has only 163 traps, in which most of the players spent considerable time. Johnny Davis and King Bullens halved the second prize, three golf balls each, for the low net score with a 74 and a 25 handicap.

Saturday afternoon was devoted to some not too strenuous sports, the men engaging in a good old fashioned game of pitching quoits, while the girls tried their hand at clock golf. Benny Dow won a fountain pen for being the quoits champion of the Class. Mrs. Bullens proved to be the winner of the putting contest over Mrs. Wallis, who was the runner-up. Mrs. Healy got a compact for winning the ladies' balloon bursting contest which followed the clock golf. After this strenuous exercise, it seemed the proper thing to have another swim at Craigville, so over we went by twos, threes, and fours for another dip in the wonderfully warm water off the Cape.

By Saturday evening others had come down to join us, so we had an attendance of seventy-four, not including Florence Luscomb, who couldn't come down until Sunday morning. But Florence made up for lost time by taking an airplane ride over the Cape, and at that she had something on the rest of us.

One of the features of Saturday's dinner was the presentation of a birthday cake with lighted candles to Frank Lange, Jr., who graciously responded to the applause. Gifts were given to him by the other youngsters in honor of the occasion.

The climax of the Reunion was a dance at the Lodge on Saturday evening, with a real orchestra and prizes for the elimination dances. This dance was thoroughly enjoyed by the twenty-seven couples who participated in it, and gave us a chance to get better acquainted with the wives of our classmates. This ended the program for Saturday.

Sunday was a day when everybody was on their own, no events having been scheduled. Most of the crowd went swimming in the forenoon, and after dinner broke up into small groups for walks or automobile rides about the Cape. Some of the crowd hired a motor boat, and went for a trip along the coast. Sunday evening was devoted to visiting with one another, before it should be time to start for home. Not having a holiday on Monday, the New York crowd, and most of the folks from outside of Massachusetts, were obliged to leave on Sunday evening. By Monday morning most of the adieus were said, although a few of us were loath to leave until after lunch, when Charlie Main hauled down the class banner, thereby bringing to a close a reunion which will not soon be forgotten. — CHARLES R. MAIN, *Secretary*, 201 Devonshire Street, Boston, Mass. PAUL M. WISWALL, *Assistant Secretary*, Postum Company, 250 Park Avenue, New York, N. Y.

1910

The Boston *Globe* had the following article about Gorton James: "Gorton James of Brookline, Mass., chief of the Domestic Commerce Division, Department of Commerce, has resigned to become distribution editor of *The Business Week*. His resignation was announced by the Department of Commerce. . . . He was born in Brookline, September 25, 1886. He was educated at Harvard University, from which he was graduated in 1908 with the degree of A.B. He was graduated from the Institute with the degree of B.S. in 1910. From then to 1913 he was Secretary and Chief Clerk to the Vice-President of the New Haven Railroad; from 1913 to 1917, he was office and credit manager of the Rubber Regenerating Company, Naugatuck, Conn.; from 1917 to 1919, he was engaged in importing with W. R. Grace and Company and also independently.

"During 1920 he carried on industrial research for A. F. Bemis in this city, and from 1921 to 1926 he was instructor in industrial management at the Harvard Business School. His first connection with the Government was in January, 1927, when he was appointed a specialist in the domestic commerce division.

"He is the author of numerous articles on employes' compensation, industrial management, an elaborate report on industrial pension systems for the Massachusetts Commission on Pensions and other subjects. Mr. James is married and is the father of three children. His present residence is in Washington. He is a member of the Cosmos Club, Washington; Taylor Society, American Economic Association, and the American Management Association." — DUDLEY CLAPP, *Secretary*, 16 Martin Street, Cambridge, Mass.

1911

June, 1929, had its traditional romance for two of our classmates, for during this month, marking the eighteenth anniversary of our graduation, Bangor, Maine, and New York were the scenes of happy weddings. Up in Bangor Stu Copeland II married Miss Annah Cushman Philippi, daughter of Mr. and Mrs. Henry Whiting Cushman, while in New York Frank Russell II wed Miss Gertrude B. Pardee, daughter of Mrs. Ensign B. Pardee. Our heartiest good wishes to both couples.

Harvey Sweetser IX, who since the war has been in the service of the Government in diplomatic and trade circles, was chosen in August to take charge of the Toronto office of the United States Bureau of Foreign and Domestic Commerce. For the past four years he has been in charge of the Bureau's office in Boston and he and Mrs. Sweetser have been living in Atlantic. Good luck, old man!

I ran into J. T. Cheney '03, brother of Burleigh Cheney II, the other day and learned that Burleigh is one of the firm of Rhode Island Builders Supply Company at Cranston, R. I., and that business is excellent. — Sam Hayes V, who came back to the North for a while in chemical

1911 Continued

lines, is now again in the South, having located at Hartsville, S. C. — John Hugelman I reports he is doing finely with the West Hartford, Conn., Finance Corporation, but the tires he won at the Jambouree Dinner in 1925 are gone.

Ted Meyer II has again affiliated with Scripps Motor Company at Detroit and reports business on the up. — Frank Osborn III, who has been back in the States for quite a period, centering at Hartford, Conn., can't resist the call of South America and has returned to Chile with the Andes Copper Mining Company at Potreiellos via Chanaral. — Bill Warner I is still striking oil in Texas apparently, for he has left Cross Plains and is now at Big Spring in the Lone Star State.

Perhaps it is because your Secretary has been in New York and classmates haven't got used to addressing him there, but at any rate, there has been a record dearth of letters from '11 men. This must have relief if we are to continue to have newsy notes during the eight publication months of The Review. Being interpreted, this means, "Write to Dennie." — ORVILLE B. DENISON, *Secretary*, The Lamson Company, 9 East 37th Street, New York, N. Y. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford, Mass.

1912

A letter from Johnny Noyes II gives us a good send-off for this first issue of The Review, this fall. Here's what the Duke of Duluth has to say: "Your letter arrived today and although it is against all laws of the Medes and Persians to write anything but necessary letters on Saturday morning in Duluth, especially in the summer time, I am, nevertheless, going to break all precedent and shoot you a line. The '12 news in The Technology Review is not only read but re-read here at the Head of the Lakes. Every time the new Review comes in I dive over to the '12 news and resolve then and there to drop you a line with my ante, but it apparently took your personal letter to crystallize good intentions into action. The enclosed check for $10.00 is for postage, envelopes, Twentieth Reunion publicity, or it is perfectly all right with me if you go and buy yourself and wife or sweetheart an evening meal in town, as you certainly have it coming. I feel sure if you keep the Twentieth Reunion matter alive by reference in each issue to plans, specifications, drawings, estimates, and so on that '12 can come to bat right up with the best of them.

"In regard to news you will note from the enclosed snapshot that the Noyes family have a brand-new baby daughter. She is nine months old today and naturally a popular lady of the household. You will note from the picture that this now makes six in all, three boys and three girls; count them yourself.

"Technology news in the West is scarce, although I frequently see Don Radford here at Duluth, who is now the President of the Radford Lumber Mills; and I occasionally see Brad Ross in Minneapolis, who is now a bloody bloated bond holder, having full charge of the H. M. Byllesby's financial offices in the Northwest. Also, I occasionally keep tabs on some of the far-distant classmates; for example, I understand that Harold Mabbott, who has a professorship at the University of Illinois, is now on a year's study trip around the world.

"I understand that Doc Sloan I has sold out the hardware business in Cambridge, and is now entering into the manufacturing game in the truck and tank car field. I get down to Chicago occasionally, but usually on business trips, so there is little time for digging up the old Chicago gang, who were about twenty-five strong several years ago when I was located there.

"The Sullivan Machinery Company's mining machinery sales in the Lake Superior district have been very good since 1925, and this year will be the best ever, both in Canada and the United States section of our territory. We have gone a long way in the mechanization of underground mining methods, so that the iron ore tonnage this year, which will probably approach sixty million tons and undoubtedly be the best tonnage in the history of the district, is being produced by about half the number of men that were employed by the same industry six or seven years ago.

"The Noyes family had a most delightful summer, and our latchstring is always out for any of the '12 men or their wives, children or relatives. Duluth is a very interesting city for either a long or short visit, and is easily reached by any of the lake boats from the lower lake ports, and is on most of the through paved trunk auto highways north of Chicago. At the rate in which the years roll around 1932 is not far off, and I have a pretty good hunch that Duluth will be represented at the '12 Twentieth Reunion." Jonathan A. Noyes, district manager, Sullivan Machinery Company, should be addressed at Alworth Building, Duluth, Minn.

A fine letter and a fine spirit. No, gentlemen, it's not a typographical error — it actually says $10.00 (ten dollars), and the check was good. So we won't talk any more in this issue about money and contributions, as we know that you'd all wonder what in the world a class secretary could possibly want with more than ten dollars in any one year.

A. C. Albee I is now connected with the Erie Railroad Company, as structural designer in the New York office. His home address is 19 Marion Terrace, Maplewood, N. J., which we surmise is a commuting point on the Erie System.

We know that everyone will be glad to hear something of and from Eric Kebbon, IV, our Class President. We have a short note from him, saying in part: " . . . Within the next few days I will attempt to write a brief history of what has happened to me since I graduated. As to the Reunion in 1932 — I shall surely plan to be present if I am at all within striking distance of the place of gathering." We hope to have this promised letter of Keb's in the next issue of The Review.

During the summer just passed, your Assistant Secretary has had the pleasure of seeing two prominent Technology men join the staff of the McGraw-Hill Publishing Company. E. P. Warner '17 is Editor of *Aviation*, and Gorton James '10 joined the staff of *Business Week*. — FREDERICK J. SHEPARD, JR., *Secretary*, 125 Walnut St., Watertown, Mass. DAVID J. MCGRATH, *Assistant Secretary*, McGraw-Hill Publishing Company, Inc., 10th Avenue and 36th Street, New York, N. Y.

1913

News still seems to be rather scarce. Very little correspondence has come to the Secretaries this summer. It has also just happened that we have not run across many classmates.

It is with much regret that we note the death of Harold G. Bruner at his home in Wakefield on July 29, 1929. Pop was a graduate in Course X and had been factory manager for the Boston Woven Hose Company during the past few years. He had been in poor health for some time, finally succumbing to heart failure. He leaves a widow and two daughters to whom we extend our sympathies.

The Boston *Herald* of May 24 proves that '13 is always at the front. Contained therein was a picture of H. Kenneth Franzheim with the following caption: "Noted architect of New York and Chicago who will supervise the construction of a chain of airports for the Curtiss Aeroplane and Motor Company, Inc."

Phil Capen also breaks into print, but not very far. In a recent edition of the *Sunday Post* there was a picture of the Canton Legion Post Band. Anything that happens in Canton calls for Phil's presence. Hence in the picture we find Capen in the front row standing beside the leader. Phil is not the assistant leader, however. The front row had to have the bass drum, since it carried the name of the band, and Phil is the bass drummer.

It is hoped that a get-together for local classmates will be held during the next month. — GEORGE P. CAPEN, *Secretary*, 50 Beaumont Street, Canton, Mass. ARTHUR L. TOWNSEND, *Assistant Secretary*, Room 3-435, M. I. T., Cambridge, Mass.

1914

Number Three of Volume Two of *The Fourteen Pointer* contained the story of our Fifteen Year Reunion. As this issue was mailed to all Fourteeners, it will not be necessary to repeat here any story of the Reunion. A check-up has shown that the only casualty was Hal Ambler, who spent a few days in bed following the Reunion. Inasmuch as Hal had been spending several weeks in Canada just prior to the Reunion, it cannot be determined whether it was the cumulative result of too much Canada or the mixture incident to his constant attendance at various bridge games at the Reunion that caused his illness. Hal soon recovered and returned to Canada for further strenuous treatment. We had some worry as to whether or not Peb Stone and Art Peaslee would survive the week-end. In order to get everything

1914 Continued

running smoothly, they arrived on the scene a day ahead of the rest of us, and obtained a nice start. At the end of the Reunion they were still going strong and, when last heard from, were in the pink of condition. In fact, Peaslee has since reported that the rest he obtained at the Reunion has enabled him to withstand the hardships of walking the floor nightly, following the arrival of Stephen Clark Peaslee on July 7. Incidentally, this is Art's third.

The Reunion was self-supporting and there was a slight margin left over, which was turned over to Dr. Rowe for use in his athletic activities. Our Class has not been one of the regular contributors to the Alumni Athletic Fund, and it was with a great deal of pleasure that we could turn the balance over this year.

Your Secretary has been unusually busy during the past summer, and has not had an opportunity to make as many contacts with Fourteeners as has been his usual summer custom. Much of the activity has been occasioned by the building of a new house. As this house provides a special room for visiting Fourteeners and all that goes with such visits, the Class should not suffer for the time lost during the summer. Experience with a previous house showed those things which visiting Fourteeners require. None of them have been overlooked in the new enterprise.

Part of the summer activity was due to your Secretary's being very active in the Radio Manufacturers Association. An incident occurred at the time of his election as President that is worth repeating. The election was in connection with the annual convention and trade show held in Chicago in June. Stirling Harper read of it in the Chicago papers, and as a loyal Fourteener decided to call and offer congratulations. He thoughtfully telephoned first, and through some circumstance, in trying to locate your Secretary among the 30,000 people attending the convention, was informed that your Secretary had been taken to a Chicago hospital suffering from too much bad liquor. Knowing your Secretary, Harper naturally did not believe this. He tried a second time and got the same report. Still not believing the report, but being very much concerned, he came in to Chicago from Wilmette to make certain of the truth or falsity of the report. Needless to say, he was very much relieved to locate your Secretary, still very busy, and far from ill. The incident has, however, a considerable moral aside from that of the dangers of bad liquor. No Fourteener will ever be left in difficulty when there is a classmate around. Harper is doing architectural work in Chicago, and wanted it known that he would be glad to hear from any Fourteener whose company was contemplating construction in the midwest district.

While on Cape Cod during the summer, your Secretary met Ralph D. Bates, who happened to be there just for a few days. Bates is assistant sanitarian of the New York State Department of Health, and is located at Delmar, N. Y. Like most Fourteeners, he has grown fat and bald, looking prosperous as well. It was an expensive visit for Ralph, because your Secretary was successful in extracting $2.00 for class dues from him. A '13 man who was visiting in the same location insisted that this payment was hush money for not reporting Bates's activities in recent years.

Donald Dixon is still maintaining the leading garage in the Buzzards Bay district. In spite of a rather dull winter, the summer was unusually active, so much so that Dixon has purchased a new house. In addition to his regular business, Dixon has become quite a politician and is second assistant mayor of Monument Beach, with the principal duty of supervising the purchase of a new fire engine once in ten years. One day when Dixon was away, it was learned that he was in court trying to prevent the purchase of a fire engine in 1929, as the next date of purchase was not scheduled for a year or two hence.

The only Fourteener officially visited during the summer was Porter Adams. A brief trip was taken to his summer home in the hills of Vermont. Porter is resting there and hopes soon to take an active part again in the class activities. To keep himself amused, Porter has put in a model machine shop, where he is spending hours doing for pleasure all those things that we once considered chores in Professor Smith's machine shop at the Institute.

Israel Paris left his patent business in Washington long enough to visit Boston during the early part of September. His visit was on the day of the Technology luncheon at the University Club. Accordingly, Paris, Crocker, Wilkins, Horton, and your Secretary held an informal '14 luncheon.

From Washington we learn that Captain L. W. Burnham of the Marine Corps is Secretary-Treasurer of the Marine Corps Association. He, however, expects to leave Washington some time during the coming winter. We also learn from Washington that Captain A. H. Waitt of the Chemical Warfare Service is active in the preparation of information for the officers of the Service. He was the author of a very interesting article, appearing in the June 15 issue of *Chemical Warfare*, entitled "The Organization of the Chemical Warfare Service at General Headquarters and Headquarters Communication Zone."

The only Fourteener to write a real letter in recent weeks is Dave Gould. Dave is at Riverton, N. J., and is with the Calco Chemical Company, whose plant is at Bound Brook, N. J. Dave has a son aged nine, another aged seven, and a daughter a year and a half old. As noted in a previous issue of The Review, Dave had the terrible misfortune to lose two other daughters. We want more letters from classmates.

In reading various issues of *The Patent Gazette*, it has been noted that there have recently been issued three patents to Fourteeners. The first was an acoustic device, issued to E. C. Wente; the second covered a high-frequency measuring system, issued to H. A. Affel; and the third, a television system to J. W. Horton. All of these patents have been assigned to the Telephone Company.

There is an old proverb which says that it is always quietest just before a storm. As but a single letter was received by your Secretary in recent months, it must be that many are about to come in. Is yours to be one of them? — HAROLD B. RICHMOND, *Secretary*, 30 Swan Road, Winchester, Mass. GEORGE K. PERLEY, *Assistant Secretary*, 21 Vista Way, Port Washington, N. Y.

1915

Dr. Fay of the chemical engineering course at the Institute answered our letter as follows: "I wish to acknowledge the receipt of and to thank you for your note of May 22, expressing the sympathy for myself in my illness from the Class of 1915. It is always pleasant to be remembered by one's friends and especially so in this case where there are so many concerned. Please accept my thanks for your personal good wishes and extend my appreciation of the good wishes of the Class." I have not heard further of his condition but I know you all join me in hoping he is now considerably improved.

Late in October there will be a Class Dinner in Boston, followed by one in New York, for our usual get-together to discuss particularly the plans for our coming Fifteenth Reunion next summer. All those in favor of making it a wow be sure to come, or at least to write me.

From 1758 Wendall Avenue, Schenectady, N. Y., Phil Alger wrote: "On August 19 our eldest son, Langdon, died after a long illness, the final result of a fall he suffered more than two years ago. He was just seven years old and had retained through all his handicaps the most delightful cheerfulness and enthusiasm, so we are going to miss him extremely. How are the plans for our Fifteenth Reunion getting on? I hear that Douglas Baker is coming all the way back from Spain for the event, and I should like to come, too." When I last saw Phil he told me of his son, but expressed a hope for his eventual recovery. I am sorry to hear of his loss and, for the Class, send Phil and Mrs. Alger our sincere sympathy for their sad bereavement. Phil takes first honors for signifying an intention to go to the Reunion.

Around Boston I have seen Frank Scully, Mitch Kaufman, George Rooney, Henry Shiels, Jac Sindler, Clive Lacy, Max Woythaler, Jack Dalton, Ralph Joslyn. They are all busy, all happy, all waiting to read what you other fellows send in. Frank Scully says Clive Lacy has just built a big house on a thirty-acre estate near Charles River Village, with a living room forty by twenty-eight feet. I can't vouch for the accuracy of these figures, but I understand you need roller skates to get around the house and that there are spring boards in the bathtubs.

Ralph Joslyn says that Lucius Bigelow has left Brown and is now teaching at Duke University in Durham, S. C. Lucius escaped from a year at St. Lawrence University up in New York State, a bourne

1915 Continued

from which no single man ever returns single. Let's hope he retains his blissful bachelorhood against the charms of the southern beauties.

And so to our foreign section. Old Bill Holway writes from Russia: "I am hard at work on a seventy-five mile pipe line survey. Moscow has 2,500,000 people and must have 100 million gallons more water per day." I am still hoping to hear more from Bill on what must be an extremely interesting experience.

Remember to send in news. Help me make this a big, interesting, enjoyable column this year. — AZEL W. MACK, *Secretary*, 377 Marlboro Street, Boston, Mass.

1916

The bachelors have been holding out well, yet their number is continually decreasing. The following will be of interest: "Mrs. Henry W. Perry of 10 Crescent Street, Weston, announces the engagement of her daughter, Miss Marion Robinson Perry, to Frederick Stimpson Kenney, son of Mr. Charles C. Kenney, also of Weston, and the late Mrs. Kenney." The wedding will take place in the spring. — "Mrs. Mandel Sachs of 1526 South Turner Avenue, Chicago, announces the engagement of her daughter, Miss Frances Eleanor Sachs, to Mr. Saul Alexander Hoffman."

George W. Repetti, who has been a member of the staff of the Dorr Company in New York for the past thirteen years, has now accepted an unusual opportunity with the Carlton interests located at Colorado Springs, Colo., who control metal and coal mines, beet sugar factories, oil properties, and so on. He entered on his new job on August 1.

Rusty White has severed his connection with the Library Bureau, and has established himself as a consulting management engineer. He is now living in Walpole, N. H. Rusty has just issued a most instructive booklet entitled "Management Engineering as a Guide to Management Control." If your business is slipping and you can't continue to pay your 20 per cent dividends, just drop him a line and he will put you on the right track again.

As to my own doings, I have been extremely busy all summer making golf balls. As yet we are only a small factor in the field, and probably very few of you have heard of our brands which are "Arco," "Gem," and "Demon." The last one is a new ball which we have put out this year to sell three for a dollar, and it has met with tremendous success. Our slogan for this ball is "Goes like the devil, tough as hell."

On one of my trips to New York I spent a very pleasant evening with Bill Farthing and his wife at their Fifth Avenue apartment. You just can't hold Bill these days, as he is the proud father of Bill, Jr., who arrived early in July. Bill is as busy as ever with the construction of apartment houses in New York.

Even though I manufacture golf balls and can therefore lose any quantity at no cost, I have found time to play golf only three times the whole season. As a matter of fact, I don't really work as hard as this would indicate, for my hobby is boat racing at Marblehead. We had a wonderful season and managed to finish fourth in a class of twelve one-design boats which are twenty-nine and a half feet over-all.

Chuck Loomis writes from Detroit that there is no particular news from that section. Jeff Gfroerer is still with the Olds Motor Works as assistant to the President on sales work. Phil Baker and Milt Pettibone are around town and seem to be busy most of the time.

Santa Claussen and his wife took a trip of five weeks abroad last spring, returning in the early part of June. While in London, Santa renewed many of his old acquaintanceships made during the war, while he was in the Naval Reserve Flying Corps. They also visited Holland, Switzerland, the Rhine Country, with a brief stop in Paris. — HENRY B. SHEPARD, *Secretary*, 269 Highland Street, West Newton, Mass. CHARLES W. LOOMIS, *Assistant Secretary*, 7338 Woodward Avenue, Detroit, Mich.

1917

Much of the grist this month comes from The Review Office. In August, Lobby went to North Carolina to attend a wedding — not his own — and then explored the Carolinian, West Virginian, and Pennsylvanian sight-seeing territory. He will hardly say any more about his trip than will Bill Eddy, who has again made a surreptitious visit to Paris and European watering places, presumably in the interests of his firm. The prize contribution is from Frank Conaty, who wrote as follows from the Fitzsimons Hospital, Denver, Colo.: "I received your letter last January or February, but I wasn't feeling so hot then, or caring whether it rained or snowed — in Hawaii, the Paradise of the Pacific, too. . . .

"I was unable to attend the dinner that The Technology Club of Hawaii gave for George Gilmore '90, and James W. Rollins '78. In fact, that was the day I was admitted to the hospital at Schofield Barracks. However, several days later Mr. Gilmore was kind enough to come out to my quarters with Mr. Rollins, and then over to the hospital where he said you had told him to look me up. They made me feel better at once, and I surely did need plenty of feeling better. I had been sick off and on with asthma since December, but was still doing duty. About the middle of February I got a dose of flu and went to the hospital on February 23. Since then I have been in the Tripler General Hospital in Honolulu, the Letterman Hospital in 'Frisco, and here. I seem to have my ailments pretty well licked now. I am able to be up and around for exercise, and I am enjoying this Colorado climate to the full. I have gained thirty-eight pounds since March 10 and am still going. If you have any cast-off clothes or uniforms, send them to me, as nothing of mine fits. I tried on a uniform the other day and had to get help to peel the breeches off me.

"L. L. Clayton, Captain of the Signal Corps, was stationed at Fort Shafter, T. H., while I was at Tripler, and we saw one another several times there. Also Cy Medding came over from Fort Logan to see me several weeks ago. He is adjutant of the Second Engineers at that post."

Once again Neal Tourtellotte appears as a recognized pioneer in the distribution of high grade flooring. The title of an article in the magazine, *Direct Mail Selling*, "40% Returns Suit You?" should be brought to the attention of every class secretary. There must be some magic in it. Neal's direct mail selling program was given first place in a recent contest sponsored by the Advertising Club of Seattle, Wash.

The A. S. M. E. *News* recently reported that Ed Aldrin was making a 6,000-mile air trip over Europe to standardize fuels and oils. "New perspectives in the use of airplanes by business men have been opened here (Berlin) by the visit of Major Edwin Aldrin, head of the aeronautical department of the Standard Oil Company of New Jersey. He left Tempelhofer Field in his own plane this morning accompanied by Mrs. Aldrin and a mechanic, on a nonstop flight to Rome.

"Major Aldrin is the first American to fly a private plane on a business tour of Europe and his flight represents an important, if not a sensational, milestone in the slow but sure substitution of air travel for land travel in ordinary daily affairs. Within thirty days the Major will have covered more than 6,000 miles and have visited twelve European capitals."

William Allen Clark has plunged in for himself in the practice of consulting engineering in reinforced concrete and steel design, heating, electrical, ventilating and industrial plant design, with an office at 608 Temple Building, Rochester, N. Y. He has been married nearly four years, has a boy sixteen months old, and is living in Pittsford, near Rochester. — E. P. Warner, former Assistant Secretary of the Navy for Aeronautics, has been appointed editor of *Aviation*, a McGraw-Hill aeronautical weekly. He has also been chosen President of the Society of Automotive Engineers. — I believe we neglected to note the marriage of John Ruskin Coffin last May. The fortunate bride was formerly Miss I. Hilda Stewart, Radcliffe '19. — We cannot resist the temptation to refer again to the marriage of one George Montgomery Lovejoy, of Littleton and Scituate Harbor. All members of the Class are requested to report any reminiscences of duck hunting expeditions or other indications of the choice freedom this model bachelor formerly enjoyed.

One James W. Doon, an alleged leading business man of Henniker, N. H., was elected to the Henniker School Board for a term of three years last spring. Earlier announcement was deferred pending confirmation of this outstanding piece of news. It is understood that appropriations made by this school board at times run in excess of $10,000 per year. Mr. Doon thus joins the increasing '17 group

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of educators which includes Dudley Edwards Bell, chairman of the scholarship committee of the Technology Club of Philadelphia.

As announced in The Review last July, Jimmy Wallis is the American Trade Commissioner at Berlin. We have definite indication that he is very much on the job although he did spend his vacation in Italy. Bob Erb, traveling with the operating head of the J. F. McElwain Company saw Jimmy in Berlin and gave us a favorable report. While abroad, Bob went into the shoe manufacturing and retailing conditions on the Continent. He expects to be back in New York by October 1. — We are also informed of the arrival of Ursula Borg Loengard on September 7. Congratulations are extended to Dick and, Mrs. Loengard. — RAYMOND S. STEVENS, *Secretary*, 30 Charles River Road, Cambridge, Mass.

1918

The Boston *Evening Transcript* has long been an organ of conservatism and, therefore, did not give half the deserved acclaim to its announcement on June 8 of the engagement of John T. Norton to Miss Rose Eleanor Demmon of Detroit and Ann Arbor, Mich. — Not quite a fortnight later the New York *Herald-Tribune* gave two sticks of type to chronicling the marriage of Henry M. Blank and Miss Evelyn Bayne, who answered "I will" to the momentous questions as put by Dr. Harry Emerson Fosdick in the Park Avenue Church.

About that time your Class Secretary was staying across the Hudson River at East Orange, hard by Jack Kennard, Mal Eales, and Pete Harrall. We had several wonderful times with Mal's seven-year-old daughter, whose appreciation of all-day suckers runs into wholesale quantities. So did our appreciation of those waffles Mrs. Eales made. The small boy of the family is not yet out of the daily dozen and his fond father calls him by so many names that I'm not quite sure whether David is right or not. The name of Jack Kennard's daughter has just plumb escaped me, but not the sweetness of her smile nor the way in which she can crawl across the bed for a spool. Largely on the young lady's account the Kennards have given up their Arlington Avenue apartment for a single house with a back yard for cable research and babies.

Ken Reid has an office several stories nearer Heaven than can be reached on foot. When I saw him he was looking forward to his promised trip to the White Mountains, but I could only look back in astonishment to the time when Ken once lent me his coat to wear to a Faculty meeting. The 1929 model would cover us through an angle of about six pi's.

News of Ben Ballentyne came by the coincidence of meeting his uncle at an Old Home Day celebration in Connecticut. Ben, it seems, is an inventor and quite a man among the mechanical group at Fitchburg, Mass. He has invented some sort of double screw thread (or is it a machine for cutting them?) that is bringing him fame.

We record with expressions of sympathy the death of Henry Berliner's father at Washington, D. C., on August 3, 1929. Mr. Emile Berliner has long been a famous inventor and is perhaps best known to the general public for his work on helicopters and the invention of the microphone. For ten years or more Henry has been working in the laboratory with his father.

In a popular magazine lying on the shelves of a small town library we found an account of the Chicago Planetarium which is being built at a cost of $500,000. It is also described in the leading article in the *Scientific American* for September. The architect is none other than Ernest Grunsfeld.

Inspired by the easy grace of Sax Fletcher and Ralph Whitcomb on the golf links at our Ten Year Reunion, one of the '18 boys has taken up the game. Hitherto his natural instinct for walloping things has found adequate outlet in the necessity of bringing up a family of children in the way they should go. Unfortunately a well-meaning classmate has just told him it isn't golf he is playing — it is trap shooting.

From the Norwalk, Conn., *Sentinel* comes the following clipping: "Pure sheet copper, declared to be 99.98 to 99.99 per cent pure, is automatically made in a new machine invented by Richard A. Wilkins, 127 Hale Street, Beverly, and perfected by the Industrial Development Corporation, 48 Loring Avenue, Salem, of which Mr. Wilkins is Vice-President and its chemical engineer. Mr. Wilkins, who is a graduate of Technology, directed the development of this machine in the laboratories of the local concern.

"This machine is so perfect and does such a thorough job that it eliminates five steps formerly essential in transforming native copper into thin sheets. The replaced steps are smelting, casting into slabs, electro-refining, melting and casting into cakes, and rolling the cakes into thin sheets, which, in the case of copper one-thousandth of an inch thick, require sixteen strips through the rolls and several annealing operations. . . ."

The Hartford, Conn., *Courant* reports the following item: "John C. Braislin of New York will join the staff of the Travelers Fire Insurance Company next month as head of the marine department. In his new position he will have complete supervision of the underwriting of tourists' baggage, parcel post packages, goods shipped by truck, railway or boat, furs in storage, registered mail, and the many other kinds of movable property which are not ordinarily insured under regular fire insurance policies. . . .

"Mr. Braislin is a graduate of the Department of Naval Architecture and Marine Engineering of the Institute and a postgraduate of Harvard. He is licensed as a mate for steamers of any tonnage, any ocean, having served his apprenticeship at sea and in shipyards. During the World War he served overseas as a construction officer and navigating officer of troop ships and ammunition carriers. In 1919 he was general foreman and superintendent of the Morse Dry Dock and Repair Company and in 1920 joined the United States Salvage Association and American Marine Insurance Syndicates. In 1922 he went with the New York marine office of the Firemen's Fund Insurance Company and a year and a half later was made manager of the western ocean and inland marine business for eighteen states, with headquarters at Chicago. In June 1927 he returned to New York as assistant manager of the Atlantic marine department of the same company and has been assistant manager and underwriter of the marine, inland marine and all risks classes for the Firemen's Fund and Marine Insurance Company and the Occidental Insurance Company of San Francisco, with headquarters in New York City." — F. ALEXANDER MAGOUN, *Secretary*, Room 5-328, M. I. T., Cambridge, Mass. GRETCHEN A. PALMER, *Assistant Secretary*, 51 Houston Avenue, Milton, Mass.

1920

Just as the July issue of The Review had gone to press I received the following letter from two of our leading lights of or from whom I had not heard for many moons, H. P. Etter and E. T. Van Deusen. I know you'll be as pleased as I was to hear from them. Here's the letter: "I have just had a swell feed cooked by Snug Etter's wife, and Snug and I are trying to compose this. Our respective wives, also respectable wives, are gossiping in the other room. Eleanor and I live in Pasadena, which is fifteen miles north. It makes us both homesick for Boston to read of Perc Bugbee and Buck Clark. Give them our best. Also Ken Akers of Course I fame.

"Snug is President and General Manager of Air Reduction Sales Company. He claims that he only sweeps out the Los Angeles office, but all I say is that he gets a free trip to New York every year, and who below a vice-president rates that?

"I am still insuring lives. Tell Perc Bugbee I'll be in Boston in August for a day or so, but I haven't ordered a Rolls Royce yet. Enter David Etter for the Glee Club for the Class of 1949. From the sounds coming from the bedroom he'll develop a great voice by then. My one and only, Elizabeth, aged two and a quarter, will not be a co-ed at Technology. Perhaps Wellesley will suffer.

"Buck Clark should come to Los Angeles. Tell him he could sell Boulder Dam real estate. Our regards to Johnny Nash, Norrie Abbott and all of the Class of '20."

During the long interval between last July's notes and this November's, I have only seen one or two classmates and have heard from even less than that. Keep in mind, fellows, that this is our big year, the year of the Tenth Reunion next spring. It isn't any too soon to start thinking and talking about plans for this big time of ours. You will help a lot by getting in touch with me and letting me know you're alive and what you're doing.

1920 Continued

I have had one or two very pleasant visits with Al Burke, who is now located in Boston as the New England manager of the Sharpless Separator Company. I have the good fortune to see Ed Murdough every now and then, Ed being a star salesman for the Cities Service Company at such times as he is able to take off from golf. — Perc Bugbee is at present taking a much needed vacation in the form of an automobile trip to Quebec and Montreal, lucky stiff. — I hear from Al Burke that Scoop Mosscrop has gotten to be one of the big guns in the public utility game, being with the Public Service Company at Manchester, N. H. — I have all too brief a note from Bunt Murphy who is still connected with the Near East League at Beirut, Liban. (Get out the atlas.) Bunt sends greetings to '20 men.

Good old Hank Pierce has dropped in several times whenever he's had a bit of news, and if it wasn't for him these notes would be even skimpier than they are. Hank was in Worcester a short time ago and saw Ernie Whitehead, who is the Manager of E. Whitehead and Company, contractors — a mighty flourishing concern from all I hear. Homer Howes is with the Bemis Bag Company, operating out of St. Louis as traveling auditor. Ernest Bangratz has gone to Pittsburgh as research assistant for the Electrical Manufacturing Company. Alfred Ellsworth is with the Titman Egg Company, which is a subsidiary of the Borden Company. He is working as a biologist. Warren Chaffin is with the U. S. Finishing Company at Norwich, Conn. Heinie Forrest has become an Associate Professor of Chemical Engineering at the Institute. Art Weinbaum and Dave Wexler are civil engineers in Boston under the firm name of Weinbaum and Wexler. Another pair of '20 men operating under their own names are Grosser and Schlager, who are running a structural steel business in Somerville. Morris Lipp is with the City of Miami in the engineering department, and Ken Newhall is an engineer with the City of Boston. C. G. Hart has become an expert on water systems and his office is in the Park Square Building in Boston.

Several weeks ago I received a nice letter from Harold Dennison, who is President of the Dennison Airplane Sales Company which runs the Dennison Airport at Atlantic, Mass. He very kindly invited me to call at the airport and take a ride in one of his planes. He guarantees to get me air-minded if I will pay him a call.

I was pleased to see in the Boston *Evening Transcript* of September 5 an announcement of the engagement of Ken Roman to Miss Bernice Freedman of Brookline, a Smith graduate. The Class of '20 extends heartiest congratulations to you, Ken. — HAROLD BUGBEE, *Secretary*, 9 Chandler Road, West Medford, Mass.

1921

Fully imbued with the little theatre movement we have given in to the urge to open this series of '21 recitals with an extremely personal note. So personal that your best friends really wouldn't have told you if our eminent contemporary, B. Franklin's *Saturday Evening Post*, hadn't collected vast sums from the A. Nash Company of Cincinnati for printing a full-page announcement breaking the big news to its public. The fact is that Larcom Randall VI has got a suit of clothes. No, that isn't exactly it — Randy has a new Nash. Still not sufficiently explicit, for it wasn't one of those sporty gohicles that are always cutting in on the line of your drive. It appears that what Larcom got was a suit made from a new pattern of cloth manufactured by said company which celebrated the event with a whole page ad containing a picture of Randy against a background of what looks to be the Charlestown hoose-gow and captioned, "Larcom Randall Selected No. 1626." Most of us remain content that our tailors refrain from publishing their views on the occasion of our being issued new uniforms. To be personal again, we might confide that, in return for this splendid ad of ours, we should be pleased to receive from Messrs. Nash even No. 1492 or perhaps No. 1066, being just a poor struggling juggler of watts and not "the junior member of the Lawrence Press, Inc., of Boston, who honors Nash with his regular patronage." (Adv.)

As predicted in our last appearance on these pages, R. H. Gilbert VI-A did graduate to the Benedicks as our last note about him went to press. Gillie and Miss Ruth Susan Tertsch of New York chose the Little Church around the Corner in New York for the ceremony. They are residing in New York City where Gillie is chief amortization engineer for the New York Telephone Company and is located at 104 Broad Street. Here's how, Gillie!

Another wedding of interest was that of E. S. Brown II to Miss Effie Leslie Culbert of Beverly Farms, Mass. Ned is now connected with the Salem agency of the Frigidaire Company. Mr. and Mrs. Brown will reside at 71 Locust Street, Danvers, Mass. Congratulations from all of us.

We quote from a memorandum from Professor C. E. Locke, the patron saint of all class secretaries: "A large book entitled Bulletin 44 of the State Geological Survey, Atlanta, Ga., on 'The Geology of the Kaolins of the Coastal Plain of Georgia' has been written by R. W. Smith XII and recently appeared in print." Memories of another of Dick's accounts of his researches — then a non-agricultural note on southern peaches which we gave considerable prominence in these columns — prompts the query if kaolins wear crinolines and how many of 'em in Joejah can be termed plain. We are unable to offer any tangible reward for answers but a note from Dick to your Asec will be highly appreciated.

It is with apologies that we hasten to report at this late date the arrival of another son at the home of Professor and Mrs. J. R. Cudworth. Jimmie is now acting director of the School of Mines of the University of Alabama. — RAYMOND A. ST. LAURENT, *Secretary*, 225 Cleveland Avenue, Whiting, Ind. — CAROLE A. CLARKE, *Assistant Secretary*, Bell Telephone Laboratories, Inc., 463 West Street, New York, N. Y.

1923

The first item of news for the season concerns our Class President, Bob Shaw. Bob, who has been hiding for some time, is going to be married early this fall. His bride will be Miss Marion S. Dean of Dorchester, Mass., and Bath, Maine, and the event will take place in Bath. I'm sure the whole Class joins in offering you congratulations, Bob, and best wishes for your future happiness. Bob is now located in New York with the General Electric Company. Now that Bob Shaw has lead the way we hope that others who have been keeping bachelor quarters these past six years will get busy. We understand that Bobby Burns, Thomas Edison's right-hand man, is just about ready to jump off. How about it, Bobby?

William H. Donnelly was married last May to Miss Elizabeth B. Bacon of Ardmore, but this is the first issue of The Review since the announcement arrived. — John Lind and Miss Pauline Goerke were married last fall and are now living in South Orange, N. J. — Early this year Sydney Dean, tired of the so-called single blessedness, married Miss Lucy Harrison of Richmond, Va. — Another wedding which took place last year is that of Nathaniel Robinson and Miss Helen Gilliland of San Francisco, Calif. This event took place last December in California and the couple are now living in Gramercy Park.

Now we have a few engagement announcements which have come to our notice. Helen Pearson's engagement to Bob Colburn was announced last March. Bob is working with Stone and Webster in Boston as an architectural engineer. — Frank P. Knight, Jr., and Miss Laurestein Foster of Norway, Maine, were engaged last April and will probably be married this fall. — Then we heard, but have received no confirmation of the report, that George Bricker and Miss Elizabeth C. Jack are soon to be married.

The other day I bumped into John Flaherty on the street; this happens once every two years or so. John was looking just as he looked six years ago. He is still single and carefree and claims to have no marital prospects. He is working for Tobin in Boston as engineer, contractor, estimator, checker, and every other known job connected with construction. He said that Abe Kenney is now located in Boston although still connected with the Chicago Bridge Company. He also stated that Abe is the father of a bouncing youngster, and intimated that he hasn't lost any weight since graduation. Herb Leisk is still in New York working for Moran and Proctor.

For versatility in picking jobs, I think Si Rice wins the prize for the Class. Following on the heels of a number of engineering jobs he spent last year teaching Psychology in the University of Illinois, then after a summer instructing in rail-

1923 Continued

roads and surveying at the East Machias Summer Camp, he has gone to New York to help run Stern's department store. Si reported that Jim and Mrs. Robbins visited the Technology camp while on a camping trip and that he is leaving H. P. Converse this fall to teach in a Newark engineering school. I understand that Bill La Lond is going to teach in the same place this fall. Bob Armstrong, who is still working for the Telephone Company in Boston, was another visitor at East Machias this summer. Lem Tremaine dropped into the office the other day after a trip to California. Lem claims (and rightly too) that it is easier to travel while he is still single. Perhaps his traveling is nearly over now; anyhow we are watching for an announcement from him.

Elmer Sanborn left the Edes Manufacturing Company last February and is now in the trucking business, hauling Chevrolets from the factory at Tarrytown to dealers around Boston. He seems to have met with all possible adverse conditions in the first few months so that the future can hold nothing but prosperity. Speaking of prosperity, we understand that Mal Naughton is still contracting in Philadelphia and is now the father of three youngsters. Well, that's all for now, but we hope to have a lot of hot dope by the next issue. Get in touch with your Course Secretary. — ROBERT E. HENDRIE, *Secretary*, 91 Walnut Street, Braintree, Mass. — H. L. BOND, *Assistant Secretary*, 37 Concord Avenue, Cambridge, Mass.

1925

Herbert Taylor was married on June 5 to Miss Josephine McCoy of Springfield, Ill. Mrs. Taylor is a graduate of the University of Wisconsin, and Taylor studied at Dartmouth, the University of Wisconsin and the Institute. He is working for the Franklin County Coal Company as a mining engineer. — After his marriage on July 14 to Miss Caroline Hayes, Samuel Lord and his wife spent the season cruising in Maine waters, returning to Brookline in September.

Professor Locke writes as follows: "Edith P. Chartkoff changed her name last March and became Mrs. Andrew Meyer. Her husband is a mining engineer, and they were married in Colombia, South America. Their honeymoon was spent in traveling in that country, getting back into the interior and becoming familiar with the native life. They returned to the United States early in July, were in Boston for about a week, and then went to Cleveland where Mrs. Meyer was working."

Charles E. Knight and Miss Marion Philbrook were married on June 12 in Springfield, Mass. They went on a motor trip to Canada, then returned to Plymouth, Mass., where Chuck is employed by the Plymouth Cordage Company as test engineer. — Miss Helen D. Gardner became the bride of George W. Elkins in August. — The marriage of Theodore F. Plympton to Miss Dorothy Janet Bugbee took place on July 24 in Paynesville, Minn.

The two following engagements have been announced: of Miss Elizabeth Gamwell to Theodore H. Butler, and of Miss Helen MacGregor to Willard Allphin. Ted is station engineer for the Narragansett Electric Company, Providence, R. I., and Willard is with the Graybar Electric Company.

E. S. Gray has left Professor Berry's office to take a job as an associate professor of Mechanical Engineering at the University of Missouri, Columbia, Mo. — As for myself I am now residing in Luke, Md., still with the same company, but doing different work. I'm in the drafting room, helping out with some remodeling work, and in my spare time wandering around to see how a paper mill operates. Gerald Milot has asked me not to make any comments about men who go to the balmy South for the winter. However, I have been told that when the cold winds get to blowing here it's like being in a venturi throat; so I can't be counted among the lucky ones this winter. — FRANK W. PRESTON, *General Secretary*, West Virginia Pulp and Paper Company, Piedmont, W. Va.

COURSE II

The fellows were very busy all summer, so much so that none of them had opportunity to drop a line or two to the Course Secretary. Whereupon my scribal duties become a cinch so to speak, for no news, no notes.

However, all is not lost this month. I was favored to meet Ashworth in Fall River and had just a chat with him. He does look fine and apparently is very active in business. His firm is Ashworth Brothers, with offices in Fall River, and I might say that regardless of whether any of you are interested in textile equipments, the latchstring of Bob's door awaits all, as he is anxious to keep in touch with the old gang. Some weeks later I understand that the Ashworth family became three, a baby girl, Elaine Marie, born July 29, weight eight pounds.

One week later, I was supposed to meet Chippendale, whom I supposed was in Mexico. But Chip advised me that his itinerary is likely to carry him anywhere, even to Boston, where he is now engineer at the City Hospital. His travels and experiences are much too broad to be recorded properly in these columns, but I can assure you that a chat with him is a treat.

And so, that's all until next month, when I hope to be able to chronicle the activities of several of the fellows who are going to write. — NELSON MALONE, *Secretary*, 184 High Street, Boston, Mass.

COURSE V

Following the custom of past years, this season's notes are formally opened with a call for the present whereabouts of one John E. Chrystal. Things haven't reached the point where a reward is offered, but I am extremely anxious to hear from old Jawn. Some day, when I have more time, I will weave a mystery tale around the Merlin of Course V. It is my private opinion that, on leaving his home in Bickerstaff Street, Back Bay, he never even reached the corner but was gobbled up in one of those dens of iniquity that line that pleasant thoroughfare.

The writer has found the summer very eventful. My house has taken me off the road and has assigned me to New York, where I have been playing around since August 1. That low, grinding sound to be heard in the distance is Jimmy Walker and Grover Whalen, gnashing their teeth in unison as they see threatened their championship for sartorial perfection. I haven't really got going as yet, however. I find this little town to be a cold-blooded proposition as far as making friends goes. I've been here three months, now, and I've yet to find sweet-scented notes pushed under my door. If New York is a glad-hand town, then I'm the Queen of France.

I had a month in Boston before moving here and took the opportunity to drop over to Worcester to see Sark, who has been under the weather of late. He may be reached at his home, 38 Uxbridge Street, and says he would like to hear from everyone. — I also drove over to Lynn to see Paul and to play with the baby. I saw Paul all right, but didn't achieve the other objective. No game, wet grounds. Paul went fishing for a vacation and caught all the fish in Maine, so he says.

I have a very interesting communication from Stanley Lane. A postcard from Zermatt, Switzerland, says: "I spent four months doing a wide swing through Europe, from the North Cape to the Matterhorn, and from Budapest to Paris. I am going to be at the Institute this year, taking an M.S. under Professor Lewis. I tried my hand at mountain climbing on the Jungfrau and got a snowburn that makes my map look like Soviet Russia." This is very nice to hear for Stan was one of my lost brood and I'm glad to run him to earth at last. I'm sure we all join in wishing him success in his new venture at the Institute. (Note to Editor: If our Soviet correspondent resents the comparison of his Fatherland to Stan's face, kindly change copy to Manchuria or any country where there is no danger of stirring up international complications.)

Will you all note the new address? I have a sweet little apartment down here where I am holding open house to all of you who are in town. Just let me know ahead of time and I'll change the sheets on the other bed. — GERALD MILOT, *Secretary*, 4306 45th Street, Long Island City, N. Y.

1926

Der Konvergenzpunkt is getting off light this month; everything there is to say is said by the worthy secretaries below. Suffice it to point out what a good example the secretarial organization of the Class is setting. During the summer both Al Laing and your General Secretary were married and der Chemikersekretär, Macdonald, announced the birth of a daughter. In addition to these exemplary activities on the part of the Secreta-

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ries, six other marriages are recorded in the various communications, and in addition, four births. It has been a big summer.

Too late to be included in the Course X Notes comes the following announcement taken from the Boston *Evening Transcript* for September 30: "Miss Helen Hersey Campbell, daughter of Mrs. Ernest Wallace Campbell of Wollaston, was married on Sunday to Carleton J. Everett, son of Mrs. Muriel J. Everett, of Somerville and Presque Isle, Maine. The ceremony took place in the garden of the home of the bride's mother, and was attended only by members of the immediate families. . . . After November 15 Mr. and Mrs. Everett will be at home at 20 Kepner Street, Wollaston. . . ." — J. R. KILLIAN, JR., *General Secretary*, Room 11-203, M. I. T., Cambridge, Mass.

COURSE IV

Now that autumn is again upon us, it is meet that we should reveal the activities and habitats of all wandering architects. Leon and Mrs. Zaitzevsky have settled in Los Angeles, where Leon is now employed in the improvement of Californian architecture if that is possible. — Bob and Mrs. Dean plan to return to this country about October 1.

Hi Waters has apparently taken a pleasure jaunt these last few years. He spent some time in South America, then migrated to England, thence to Gibraltar, France, India, Ceylon, Egypt, Morocco, Algeria, Sicily, Sardinia, Corsica, Italy, Switzerland, France again, then Spain, Majorca, England, Scotland, Isle of Wight, Ireland, the United States, Brazil, Argentine, and then back to Brazil. Now he expects to run around the Horn to Chili, Peru, Bolivia, Paraguay, and Uruguay. I have probably skipped a few of the places he has been, but knowing the total to be some fifty thousand miles, you can fill in to suit yourself, and it will, no doubt, be right. Hi is introducing Craftex to the South Americans, so I shall now begin stating in my lectures to young architects that all South American houses are finished with Craftex.

Sunny Parsons, according to report, is the architectural librarian of the Institute at present. Hereafter all birthday parties for Sunny will be held in the library instead of the drafting room. — And now, may I have the pleasure of informing the whole wide world that your very remarkable Course IV Secretary has married Miss Leonarda Fisher of Los Angeles, and that Mr. and Mrs. Laing are living in Cincinnati, waiting to hear from '26 architects. — ALAN K. LAING, *Secretary*, School of Applied Arts, University of Cincinnati, Cincinnati, Ohio.

COURSE V

Some eleven return postals were sent out in the hope of gleaning something for the July issue. Only four replies were received by der Chemikersekretär but not in time for publication in July. The summer has brought a cleaning out of several desk drawers, however, so now we have more to write about. The order is that in which replies were received.

It seems we are blessed with one of Dr. Rowe's old difficulties; people living in post-office boxes. Mr. and Mrs. John Gill Fletcher are at Box 287, Willimantic, Conn., but Johnny allows he may make a change soon. Considering the size of all we have seen, it would be a bit cramped. Anyway we are assured John is still alive, teaching school and making periodic trips to Boston, where he sees Stan Cheney and Chen Salmon, as well as the gilded dome.

The next was from Chippy Chase, and here must apologies be made. Due to some mistake the arrival of a son and heir, Barclay Downing, was not recorded in the last issue as it properly should have been. Chip was quite bursting with pride because of becoming a father and because the "to the" in his title Assistant to the Treasurer of the Shawmut National Corporation was dropped March 1. The Chases have been occupying a six-room house, 7 Kenilworth Street, Andover, since the New Year.

Billings crashed through early with word he expected to spend June in Boston. We have checked up on this, and several of our correspondents have reported his presence there. Barney is still single, keeping a bachelor apartment at 5724B Cabanne Avenue, St. Louis, while he continues to toil profitably for the United Drug Company.

Irving Cowperthewaite expects to continue at the Rockefeller Institute for Medical Research another year, with concomitant part time study at Columbia. I. A. has passed his qualifying exam for the doctorate and says the way seems clear now. Doubtless everyone read with considerable envy the paper by Cowperthewaite and Dr. MacInnes in J. A. C. S. 51, 2671 (September 1929).

Van Blarcom, from the midst of his trials and joys, sent advice to all future fathers, given without solicitation, to feign (if necessary) ignorance of all knowledge of infant care and to be a poor student of the subject. This was not on a post card. We suspect Van of missing out on a lot of bowling this year, but being quite happy nevertheless. — Johnny Searles wrote from 2 Holmes Terrace, Plymouth, to say he expects this to be his permanent address. Neither floods nor fortunes occur in the town, so John has no kick. The card probably turned up in the course of moving.

Stan Cheney sat right down and wrote his little note in May and mailed it in July. Stan was the only one of the crowd to get to Edgewood for the first camp, and to the best of my knowledge no one was there in July. This, in spite of many plans for a big reunion. Well, let's try again. Deke Taylor was at camp and dropped in to see us over a week-end. Cheney does analytical work for the United Fruit Company in Boston, is unmarried, and reported no immediate prospects.

Reggie Wakeman, hot on the track of the old Ph.D., cleared out his desk about the middle of September. With a thesis under Professor Mulliken on Qualitative Identification of Hydrocarbons, Reg hopes to have the degree next year. Best of luck, boy. We are obliged to Wakeman for Steve Kamedzawa's address: 615 Gotinyama Kita Shinagawa, Tokyo, Japan.

The MacDonalds, man, wife and daughter, expect to hold a reunion at home tomorrow, so at this writing I am saying an unregretful farewell to a pseudo-bachelor existence of two weeks and wondering, "Will it still be all quiet on the Potomac?" Lorna has behaved herself very nicely so far, and Sally has recuperated splendidly. On the very day the air-minded May issue of The Review appeared, little I. R. was shifted to research work on gas-cell fabrics for Navy airships—one way a chemist can get into things aeronautical. A trip to Lakehurst with thorough inspection of the *Los Angeles* and a short visit aboard the *Graf Zeppelin* to confer with Captain Lehmann helped enliven the first week of August. No matter where you go you run into Technology men. That time it was Red Glantzberg, '27, now Lieutenant, Army Air Corps, who flew down from Long Island looking like a cross between Lindy and Will Rogers. We actually collided in the cabin of the *Graf*. On the same trip I had the pleasure of seeing and doing some of my old playmates and stamping grounds in New York. Alas, how things have changed! Now I'm back to every day labor, quite happy that it consists of putting things together rather than incessantly taking them apart.

Der Chemikersekretär hopes that all and sundry will excuse what may be taken in some quarters as razzing in his notes. It's just evidence of an inferiority and cover-up for his own sins of omission — one of which is a letter from Carl Olson, whom some of us knew freshman year, and who wishes to keep in touch with friends made in drafting room and laboratory. This missive came last April. After leaving Technology Carl worked two years for the Telephone Company, then started studying for the ministry, a liberal one, he says, which has no quarrel with Darwin, *et al.*, at Tufts College. Carl was due to graduate in June and was very busy at the time locating a church and a bride-to-be. He promised a visit here in October, so it looks ominous. More of which later. — I. R. MACDONALD, *Secretary*, 2301 Cathedral Avenue, N.W., Washington, D. C.

COURSE X

Greetings, Course X! Here's hoping all of you had most enjoyable summer vacations and have had time to rest up those writing-cramped arms. — Wonderful things have happened this summer. Old man stork brought Ted and Mrs. Mangelsdorf a handsome husky boy on July 22, and he is Theodore Augustus Mangelsdorf, Jr.

Bill Taylor dropped in during the early part of the summer and was looking fine. Bill is with the Goodyear-Zeppelin Corporation. — Dwight Woods married Miss Emmelyn Josephine Branch at Hendersonville, Tenn., on August 31. Our con-

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gratulations, Dwight, and best wishes for every good thing are extended. They are making Nashville, Tenn., their home.

Fred Broughton is back at the Institute again after running the Bayonne Practice School Station. Fred's engagement to Miss Mildred Smith of Peabody has just been announced. His bride-to-be was graduated from the Perry Kindergarten School this June. — Ed Damon is reported to be with the Cabot Company's carbon black plant at Port Arthur, Texas.

Dave Shepard is leaving Baton Rouge soon to go to Elizabeth, N. J., to the Standard Oil Company's refinery there. — Dick Jones was in Boston this summer and was reported to be looking well and prosperous. Mrs. Cummings and I were vacationing down on the Cape at the time so we failed to see him. — Charlie McHugh is now chief chemist for the J. C. Haartz Company at New Haven, Conn. They make raincoat fabrics and other rubberized materials. Charlie is not married and has no intentions in that direction.

George Ferguson and Miss Virginia Shepherd were married in Norfolk, Va., on April 20. Fergie is still with the Texas Company at their Bayonne Terminal. They are living at 894 Hudson Boulevard, Bayonne, N. J. Bruce Humphreville gets over to see them frequently and he says, "Fergie is another one of you bozos who maintain that the married state is the only one." On April 1 Bruce switched his industrial affections to the Barret Company. He is in their development department of their New York office, and states they have a wide variety of mighty interesting problems in the distillation of coal and its by-products.

To those who were in Course X-B it may be interesting to know that Frederick J. Vorster married Miss Ingeborg Böcking on May 12 at Cologne, Germany. Those of us who knew Doc certainly extend them every wish for connubial bliss and happiness. — LELAND W. CUMMINGS, *Secretary*, Room 2-013, M. I. T., Cambridge, Mass.

COURSE XV

How goes it with all the Course XV crew? No doubt you are hard at work either producing or selling, following out the ideas planted by Professors Schell and Freeland in their production and distribution courses while we were at the Institute. News at this time is rather scarce. Let's everybody come out of the lethargy which we have been in and crash through with a real long newsy letter, so that we can let the boys know what we have been doing.

Most of the news this time seems to be wedding announcements. H. C. Rickard married Miss Frances Keany, a Vassar graduate, in Brookline on Tuesday, May 17. Afterward they enjoyed a short honeymoon in Europe. — R. W. Sherman was married to Miss Elizabeth Whittemore at Georgetown and is now living in Belmont. — C. C. Ogren was married to Miss Eneda Pearl Sanborn of Malden, where they are now residing. — Guy Frisbie is now the proud father of a little daughter named Patricia. — Bill Lowell is now not only the father of a little girl, but has recently announced the birth of Harold Noyes. — Ken Lord is in Birmingham doing sales work for the Reliance Electric Company. — Harry Howard is still a printer, and between editions of various books, he finds time to run over the Cape once in a while for a week-end.

The writer is now back in Chicago and is still working for Sears, Roebuck and Company in the retail division of the general merchandise office. I am looking forward with a great deal of anticipation to a letter from each one of you so that I may have an abundance of material when Jim sounds the roll call for the Christmas issue of The Review. Let's see if we can make it the biggest letter ever! — THORNTON W. OWEN, *Secretary*, 165 North Pine Street, Chicago, Ill.

1927

During the past summer there were two weddings of which your Secretary had personal knowledge: that of George Houston, Course XV Secretary, and that of F. Edward Anderson. George married Miss Mary Saunders here in Boston and Ned married Miss Winifred Van Horsen at Wellesley a few weeks later. Without his notes at hand, your Secretary apologizes for this fragmentary account, formally extends the congratulations and best wishes of the Class to all concerned, and promises the full account in a later issue.

Yesterday a letter was received from Don Spitzli, Course X Secretary, which reads as follows: "The deadline for the first fall issue of The Review must be close at hand and I am asking if you can defer it just a few days for me. I am living temporarily at this hotel (Hotel Park Lane, Newark, N. J.) and all my files and Reviews are packed away where I cannot reach them before the week-end. For that reason I must wait until I check up on what I have written before and what news has come in recently before I can write the column.

"The third member of our household took unto himself a wife so Pub and I were left looking for a place to live for the coming year. Pub has gone into the Orange Y and I expect to be living at 4 Stuyvesant Avenue, Arlington, N. J. I shall be moving this week-end and shall break out the official records as soon as I arrive and start writing. . . ."

The latest list of address changes received from The Review Office contains the following notations about two of our Class Secretaries: Nathan Cohen is at Room 502, 116 Montgomery Street, San Francisco, Calif., and Franklin T. Kurt is at 217 Fountain Street, New Haven, Conn. During the first part of the summer, your Secretary had a visit from Nat at the time he was working out of the Philadelphia office of the Leeds and Northrup Company, expecting soon to be transferred to the West Coast. Apparently the change has already been effected. We saw Hank Kurt at the Pops last spring. He was then with a manufacturer of airplanes, but whether or not it is the same organization we do not know.

There is, we realize, very little information contained in these scattered bits, but we hope with your cooperation to do better next month. In the December issue you are sure of seeing more Course Notes and, we hope, a better assortment of general news items. — JOHN D. CRAWFORD, *General Secretary*, 7 Goodwin Place, Boston, Mass.

COURSE II

It certainly is a pleasure to have something to write about for this issue, even though most of the news is six months old. I slipped up on my dates last May, consequently the notes which I wrote at that time were too late for the July issue and are being carried over in this issue.

Ted Casselman wrote last spring that he was with the Worthington Pump and Machinery Company in Harrison, N. J., but his home address is 176 Harrison Street, East Orange, N. J. Harrison, he says is one bad town, which probably accounts for his living in East Orange. Ted is in the production department and is working for H. A. Emery '22. He says he would be glad to hear from any of the boys located in his section of the country.

Red Earl has at last turned up down in Marabi Oriente, Cuba, with the United Fruit Company making sugar. He sent in a little verse which reeks of the wanderlust, like that which the boys burst forth with every once in a while and that sounds like Kipling.

"On February 13 I sailed out of New York on a freight boat headed for Cuba. The boat wasn't in any hurry so it took us five and one-half days to make a two-day trip. I landed at a little place called Antilla and from there crossed Nipe Bay in a motor launch. After this launch ride I climbed on a *carre de gasolinea* and rode thirty miles to this place in Macabi. These gasoline cars are funny, two to six seated affairs that run on the company's narrow gauge track at one speed which is wide open and that's about forty miles per hour. There's only one thing in the town of Macabi and that's the sugar mill. This one is the Central Boston plant of the United Fruit Company. Right now the crop is on and all we do is work. Starting January 1 the mill runs twenty-four hours a day until the cane gives out or the yield gets so low it doesn't pay to grind it."

Red says he notices that a great many of the boys are getting engaged or married, but as for him, his feet itch and there are lots of places he hasn't seen yet. Red is evidently going to go places and do things. We will all be glad to hear about some of these out of the way places, Red. Anyway, let us hear from you again, whether it be from Podunk or Patagonia.

Fritz Glantzberg has accepted a commission in the Army Air Corps and was stationed at Mitchell Field, Long Island, last spring where he is continuing his career of loops and tailspins. Fritz thinks Bill Ramsaur and I got cold feet last

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December when we did not show up at the Ford Airport to take a previously planned hop with Fritz, but as a matter of fact, I contracted the flu that day and could not possibly navigate to the airport and I do not know what happened to Bill. Fritz tells of landing on the lake at Winchester, Mass., in midwinter; being forced down in Keystone, Pa., by Jupiter Pluvius only to run into Eric Hoffman who pilots and demonstrates Loening Amphibians; and taking off from Lakehurst, N. J., in a bad wind against the advice of balloon pilots after being forced down there in a fog en route to Philadelphia. Fritz was looking forward to war maneuvers at Dayton and Columbus, Ohio.

"Here we are," was the greeting I got from Tom Knowles and Larry Coffin about three o'clock the morning before Memorial Day after they had awakened me to answer the phone. The next day we visited the Aircraft Development Company's hangar on Grosse Isle where the new Navy all-metal dirigible *ZMC-2* was parked. Tom and Larry drove up to Detroit in a light car of the puddle-jumper type, and the trip was not without some educational value as they learned that engines require water as well as gasoline. After they left for Akron that evening my head was swimming in meaningless phrases such as "70,000 tires a day," "largest Zeppelin in the world," "best tires on the market," "$10,000,000 contract," "huge rubber plantation in South America," all of which meant that they are still with the Goodyear Company.

Coffin made the trip to the Pittsburgh balloon races last spring, Knowles was teaching a course in aerodynamics, and I have it from reliable sources that Gordon MacNeil, also with Goodyear, is designing a machine that will revolutionize the tire industry. I was in Akron for a few days last summer and had a very pleasant stay with the above-mentioned three men, who live together. Their hospitality overwhelmed me as they had three cars at their disposal, although two were in the pits for repairs. They held a reception in June for the '29 men who went to Akron, and from all I can gather it was quite a party. There seems to be a wonderful Technology spirit in Akron.

I was in Chicago May 24, and fortunately the Technology Club of Chicago were having their annual banquet that evening at the hotel where I was staying. There were no other representatives of the Class of '27 there. Here I heard an account of a trip made by two members of the Technology Club of Chicago to Pittsburgh by airplane — in fact this was the only Technology Club which made the trip to the Pittsburgh meeting by air.

I saw Joe Yates this summer in Detroit. He was looking well and was planning to play golf the next day with Bob Hancock '28 in Jackson, Mich. — Bill Ramsaur is now with the Harrison Radiator Company in Lockport, N. Y., having been transferred there from the General Motors Research Laboratories where he was doing research work on cooling problems. — I received a card from Hal Hibbard a couple of weeks ago postmarked Curacao, Dutch West Indies, which read: "Came up here from Santiago, Chile, through Panama last month. Have just come here from Caracas, Venezuela and am headed for Maracaibo, Venezuela, oil fields. Hope to leave there September 14 for New York and get there September 24." I expect he is in the United States by the time you read this.

I trust I may have something more to write about for next month. If not, we shall have to wait until January. — DAVID R. KNOX, *Secretary*, 13505 La Salle Boulevard, Detroit, Mich.

1928

Bachelors are fast losing ground to the ever growing ranks of the Benedicks. In fact, this condition is so general that I expect the history of '28 for the next few years will be centered around its engagements and marriages. During the summer we have learned of the following engagements: Miss Betty MacBrayne of Cambridge, Mass., to Arthur R. Keith; Miss Ada Bartley Salmon of Boonton, N. Y., to William D. Birch; Miss Priscilla Proctor of Wellesley Hills, Mass., to Mr. Lee McCanne. Undoubtedly there are many others but this information is difficult to get except in the form of rumors. If any of you know of any additional engagements I would appreciate a card giving the details.

Six '28 men said their "I will's" during the early part of the summer. Miss Helen F. White of Manchester, N. H., was married to Edgar P. Taylor of Winchester on April 20, 1929. — Miss Ruth M. Reimer of Newton Highlands, Mass., became Mrs. Richard B. Goble on May 1, 1929. The service was held in the Robinson Memorial Chapel in Boston. The couple is now living in Chicago. — Miss Virginia Gray was married to Lawrence F. Van Water on June 17 in Brookline, Mass. — Miss Katherine M. Puffer of Brockton and J. Stuart White of Taunton were married on June 18, 1929, in West Bridgewater. The wedding march and music for the reception were played by the Amphian Trio of radio station WBZ. The couple is now living in Taunton. — Miss Barbara White was married to Edward S. Petze of Wilmington, Del., on July 24, 1929. Charles Petze was best man for the ceremony. The couple is now living in New Brunswick, N. J., where Ed is working for the du Pont company. — GEORGE I. CHATFIELD, *General Secretary*, Room 11-203, M. I. T., Cambridge, Mass.

COURSE I

During the summer months news has accumulated in considerable quantity. With a stack of a dozen letters and sundry notes before me, I'm at a loss as to where to start. A letter from Earl Crawford arrived early in June, only a few days after notes for the July issue had been written. It came from the Barry Court Apartment in Trenton, N. J., and is a good one year history of Earl and of Jacoby. Here it is: "Gordon C. Jacoby, whose business associations have been closely allied to my own, has appointed me to act as a committee of one to account for our whereabouts since graduation. With the parting from the Class, Jake and I associated ourselves with the American Bridge Company and were assigned to their Ambridge, Penna., plant to receive a course in the standards, customs and good practices of the company. This lasted about three months. There we met Green and Birkenwald, two graduate men in Course I, who were there for the same purpose. All in all, this course proved to be a good tie-over from Technology to applied work. At the close of the instruction period we were assigned to the various company plants as detailers. Green and Birkenwald were assigned to the Gary, Ind., plant; Jacoby to Elmira, N. Y., and I to the Trenton plant. Around the first of the year Jake and I were together again when he was sent to the Trenton plant for about a month to help us with a heavy schedule here. The work I have been assigned to has consisted of bridge building and subway structures and has been both interesting and good experience. Since coming to Trenton, I have met other Technology men, and at present I am living with Jim Snediker '27 and Frank Bemis '25. Living the lives of real Technology bachelors, you bet."

Moyano is another whom the summer months have returned from the unknown. After graduation Pete started working for the Southern Pacific of Mexico, on construction of bridges, oil tanks, and so on. Later he was transferred to office work. When the Mexican revolution broke out, the Southern Pacific cut its force, and Pete lost his job. After a short vacation, during which we were surprised to learn he did not become a Mexican general, he went with the Mexican Light and Power Company on a $2,000,000 hydroelectric job. The work was to last from one and a half to two years, and when we received our information, Pete was engaged on the construction of the power house and erection of the penstock. His address is Salto de Tepuxtepec, Tepuxtepec, Mich., Mexico.

My own work in New York has enabled me to see several of the gang. Mangurian is here working for the Chance-Vought Corporation, designing airplanes. George is finding the Advanced Structures he studied last year extremely valuable, in fact indispensable. His work has been primarily computation of wing stresses under various types of loadings. His address is 41-11 76th Street, Jackson Heights, New York.

Bill Tandy arrived here July 1 to work for the Union Carbide Company. A week later he was transferred to West Virginia. Bill has been in New York again for the past week and is finding his job extremely interesting. The Union Carbide Company is building a series of hydro plants in West Virginia to produce power primarily for electric furnaces. The first large plant is now in the process of design and Bill's job is a study of the hydraulic features of the development. To date he has been busy computing backwater curves and

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dealing with contractors expecting to bid on various phases of the construction. The chief form of play seems to be snake hunting, for rattlers and copperheads are plentiful, using fourteen-foot level or stadia rods as weapons.

I saw Cy Meagher early in June. At that time he was with the Barney-Ahlers Company, but I understand that business with them was slow and Cy lost his job. His present location is to me unknown.

After Jim Morse had recuperated from the illness brought on mostly by the Texas climate, he returned to work with the Texaco people, this time located in New York. His work is similar to what it was in Texas, the design of tanks, oil stations, foundations, and so on.

Weinberg has been busy with the Tishman Realty Company, checking up on the work of the sub-contractors in several new apartment houses. Herm Schwartz finished up at the Institute in June and is now with one of the contractors engaged in subway construction. Claude Rice, another '28 man who was out of school for a year and finished in 1929, passed through here this week on his way to Chicago where he had a job with the Rock Island Railroad.

Josephs and I came to New York early in June and started work for the Electric Bond and Share Company, designing hydroelectric plants. Art's work has been on the Carpenter plant, a 67,000 k.w. installation in Arkansas. It has been largely designed of heavy concrete structures such as transformer platforms and retaining walls. My job has been on a smaller plant in Brazil with work on crib, arch, and gravity dams, tunnel, penstocks, power house and switchyard. Both of us are finding ample opportunity to use what we learned at the Institute. My address is 143 East 39th Street, New York, and news of yourselves can be sent here.

Here are a few bits of news picked up in various ways. In July Ed Holmes's job with the United States Bureau of Public Roads had shifted him from North Carolina to Madison, Wis. By now he has probably moved again. Jack Luby continues to average a new job every two or three months. The summer saw him shift from Keokuk to the division engineer's office of the Pennsylvania Railroad at Cincinnati. His address was the Fenwick Club. Clark's summer was almost half vacation. He spent a regular three weeks vacation in Boston during the latter part of June, then had two weeks more early in August at Camp Knox, Ky., in the Reserve Officers Training Corps.

We saw Ed Ure while he was in New York on his vacation. He is still with Bemis Industries in Boston. One of Ed's letters has this: "Several weeks ago I spent the night at the Kennebunk River Club, Kennebunkport, Maine, as guest of one Harold Porter. It seems that he was working in Canada for the Bell Telephone and got some organic trouble so he had to quit the strenuous life. So he returned for another summer as clerk of the aforesaid club through the help of T-Square Smith who is its Treasurer. In addition to his duties as clerk, Harold is sexton of the town church."

I want to acknowledge interesting letters from Hough, Cook, Jones, and Daytz. Kent is in Guatemala with the United Fruit; Bob is finishing up his Venezuela contract; Jonesy is with the Sinclair Refining Company in East Chicago, Ind.; and Al is now in Boston with the Boston and Maine. As these notes are already quite long, I hope there will be no objection to holding the details of these letters until next month. — GEORGE P. PALO, *Secretary*, 143 East 39th Street, New York, N. Y.

COURSE II

During the early part of July I went on the road for three weeks for the company, and found myself wandering around New York State with a sample case and a devilishly poor disposition. I landed in Syracuse late one Sunday night without the slightest idea of where I was going to stay. I called Murray J. Hastings, Jr. '13, who is President of the Technology Club of Central New York, and the voice I heard over the wire was full of vigor. He helped me out of my difficulty. I later had dinner with him on two different occasions and found him to be a most optimistic and enthusiastic individual who had drifted from engineering to life insurance, and seemed as ready for a fight as a tea party. If any of you fellows ever go to Syracuse look him up, and you certainly will second my motion in very grateful appreciation of the way in which he received me as a stranger in Syracuse.

I ran into Warren Fleming on the street in Syracuse one noon, and we went to lunch together. Fleming has left his former work, and is now with the Syracuse Gas Heating Company as a heating engineer working in connection with the sales department, doing both sales and installation work. He seems quite interested in the work. His primary object in staying in the Syracuse Gas Company is to learn the whys and wherefores of sales, and how best to take money away from people who have none.

I wonder how many of you know that George Moon Decamp has disregarded the admonitions of his classmates to go West and stay single, and has finally gone and done it. He was married at the home of his fiancée, the former Miss Barbara Lord, in Nyack, N. Y., on Saturday, July 20. I happened to be in Binghamton, N. Y., the day before the wedding was to take place, so I hopped over to Nyack and arrived in time to help George tie his tie for the last time as a single man. The gods were certainly good to him. As George puts it, all he needs is a peck of potatoes to start housekeeping. More power to George. The whole Class could not be there to wish him luck, but I know that every man would have been there had it been possible.

At the wedding I ran into Jerry Brickett and Johnnie Reynders. Jerry is still with the Congoleum Rug Company in Newark, N. J., and Johnnie has made a change to the Rolls-Royce Company, at Springfield, Mass. Incidentally, fellows, I will let you in on some inside dope. Apparently Jerry has two ambitions in life. The first is to buy an airplane, and the second is to earn enough money to get married. We drove back to Newark, N. J., together in Johnnie Reynder's flivver, and tried to find Newt Foster who is also with the Congoleum Rug Company. However, Newt was not at home, so Jerry, Johnnie and myself went to the theatre and called it a perfect day. — JOSEPH A. PARKS, JR., *Secretary*, 14 Caranauba Street, Roslindale, Mass.

1929

Now that the Class of '29 is included on Alumni records, more interest should be exercised by the Class in affairs of the Class and in the Alumni Association.

Come on, '29, let's get a little spirit into these notes and keep each other posted on our doings. If every man works hand in hand with either his Course Secretary or the General Secretary, we will have a set of notes in each issue of The Review that will be worth reading. Communications of that sort will help keep the class interest up and make our old associations mean more to us.

According to a couple of clippings from the Boston *Evening Transcript*, the Class of '29 has not been backward in declaring themselves all for the fair sex. On June 8 John B. Osborn came into the limelight when his engagement to Miss Molly Van Harding was announced. In the same issue it was announced that Howard L. Rich went a step or two further and was married to Miss Barbara Angier that day. Osborn was a Course XV man and Rich hailed from Rogers and Course IV. Other members of the Class may assume that Rich is enjoying the bliss of married life and Osborn is working toward the day for the jump.

Out here in Akron several '29 men have been enjoying the training course at Goodyear. Scottie Scott, however, just pulled out of here to return to the Institute to save Professor Robinson some work next year. He liked the training and the prospects and will probably be headed west after another season's experience at Technology. Johnnie Hartz and Gene Gilman still remain to uphold the laurels of Course X with Goodyear and they are making a good job of it as well as enjoying the work. Early in October the real job starts and we all make up for the time spent in training. Course II is represented by four men from '29: Hal Dick, Ray Delano, Hank Gibbons, and myself are here and probably here to stay. All of us like it and are fighting for good places with all the other eighteen graduates who came in at the same time. There are quite a number of Technology men here already so that we are not at all lost.

Let us hear from all of '29. Pass the news, any news, along and we will enjoy hearing from you. — EARL W. GLEN, *General Secretary*, 339 Hillwood Drive, Akron, Ohio.

M. I. T. Club of Central New York

YESTERDAY the M. I. T. Club of Central New York attended a luncheon at the Lamson Company given by Merton L. Emerson '04, President of the Company. About twenty were present, and after lunch they were taken through the plants and shown the manufacture of modern conveying systems and pneumatic dispatch tubes in which this company is the leader. After the tour of the plants, the members played golf at one of the local clubs.

Those attending the luncheon were as follows: J. Murray Hastings, Jr. '13; Gordon M. Gilkison '09; Samuel N. McCain '09; Allan T. Gwathmey '28; Albert N. Klyver '01; Albert L. Beach '04; Arthur H. Bond '15; William O. Hildreth '87; A. Donald Green '26; Leroy G. Miller '27; James R. Vedder '07; Walter E. Hopton '91; Dr. William C. Phalen '99; Thomas J. Hughes '19; Fred S. Hungerford '24; Charles S. Glenn '03; Merton L. Emerson '04 and Frederick W. Barker, Jr. '12. — FREDERICK W. BARKER, JR. '12, *Secretary*, First Trust and Deposit Company, Syracuse, N. Y.

M. I. T. Club of Western Maine

Trans-Atlantic flights which are carefully planned were defended at the May dinner meeting of the M. I. T. Club of Western Maine and the Maine Engineers Association by Charles E. Ramsgate of Boston and Harold Beayle of New York who were at Old Orchard with the Green Flash. The value of these flights was explained and the contribution they make to the advancement of aviation was pointed out. In addition aeronautics was discussed from the viewpoints of the pilot, the engineer, the meteorologist and the technician. The speakers were Dr. Samuel W. Stratton, President of the Institute, Dr. Carl G. A. Rossby, Associate Professor of Meteorology, and Captain R. D. Coatin, manager of the Curtiss Flying Service in Maine.

The following Technology men were present: John C. Barker '20, Raymond F. Bennett '99, Donald O. Hooper '15, Edward M. Hunt '94, Raymond J. Mayo '02, Donald H. Lovejoy '19, Philip S. Wadsworth '24, William H. Dow '89, Lewis D. Nisbet '09, Lester I. Beal '18, William N. Todd '04, James E. Barlow '05, Stanley W. Hyde '17, and George B. Connard '25. — RAYMOND F. BENNETT '99, *Secretary*, 12 Dartmouth Street, Portland, Maine.

Technology Club of Hartford

The annual meeting was held May 25, 1929, at the City Club. The following officers were elected for the ensuing year: President, Arthur F. Peaslee '14; Vice-President, James W. Cartwright '89; Secretary-Treasurer, Robert H. Mather '11. The Board of Governors consists of the following members: George W. Baker '92 and Robert H. Mather '11 to serve two years; James W. Cartwright '89, Arthur F. Peaslee '14, and Halsey R. Philbrick '06 to serve one year. President Peaslee presided at the banquet. Dr. Robert S. Williams of the Institute's Department of Mining and Metallurgy gave a very interesting talk on "Technology Today."

The annual outing of the Technology Club of Hartford was held jointly with the New Haven County Technology Club at Boxwood Manor, Old Lyme, Conn., on June 29. The first event of the day was a baseball game between the two clubs for the second cup donated by the Hartford Club. The Hartford team won with a score of 12 to 6. In the fourth golf match for the second cup donated by the New Haven Club, the New Haven players won, making the standing New Haven 3, Hartford 0. The sixth tennis was played in the afternoon. New Haven won. President Peaslee was toastmaster at this occasion. — ROBERT H. MATHER '11, *Secretary*, 51 Elm Street, Windsor Locks, Conn.

Technology Club of New Hampshire

From a clipping from the *Tribune* of Dover, N. H., comes the following account of the annual meeting of Technology Alumni at Three Rivers, the summer home of Edward W. Rollins '71:

"Edward W. Rollins, senior member of E. W. Rollins and Sons, Boston bankers, was host again Sunday at the seventeenth annual reunion of graduates of the Institute, Mr. Rollins's alma mater, held at his beautiful summer estate at Three Rivers Farm. Nearly 250 men and women attended the reunion, including prominent people from many parts of New England. Dad Rollins as usual proved a prince of entertainers, a host with a staff that had left nothing undone that could add to the success of the affair. . . .

"The archery contest opened about eleven o'clock while guests were arriving, with Dr. Robert H. Richards '68, Professor Emeritus and Dean of the Alumni, in charge.

"New Hampshire won the match with an average of 21.22 plus. Maine was second with a score of 20.43 and Massachusetts trailed far behind with only 14.7 points.

"During the period of arrival of guests all registered in the guest book and were given identification tags. After registering they filed into the dining room of the mansion where a buffet lunch was served. Dinner was served in a big dining tent under the pines where one of Simpson's best shore dinners was enjoyed." — JASON T. BICKFORD '23, *Secretary*, 30 Quincy Street, Nashua, N. H.

Technology Club of Shanghai

Our fourth meeting for the year 1929 was held in conjunction with the American University Club's annual dinner and dance. Forty Technology men and their ladies were there to brighten the occasion.

Our fifth meeting for the year was held on Sunday, May 5, in the form of an outing to Chung Sah. Wives and children brought up the total number of the party to sixty strong. Lunch on board ship, a visit to the Standard Oil's lamp and glass factory, a wheelbarrow ride, and a short hike gave everybody a good time and something to remember.

We have just started a subscription to The Review and we want to hear something from the clubs in other parts of the world. How about you fellows in the Philippines, Japan, South America, and all the others who used to belong to the Technology Cosmopolitan Club? — WALTER KWOK '27, *Secretary*, 19 Lucerne Road, Shanghai, China.

New Haven County Technology Club

The New Haven County Technology Club and the Technology men in Waterbury put on a very successful dance and entertainment on Friday, March 8, in the Yale University Faculty Club on the New Haven Green. A peppy orchestra, a very good entertainment, and refreshments served by the ladies all tended toward an enjoyable evening. About thirty-five couples attended.

On May 19 the Club met at the Y. M. C. A. at Waterbury. A bowling match between teams from New Haven, Waterbury, and Hartford resulted in a victory for the New Haven team. After a dinner, Lt. R. B. Bourne of the Forty-Third Division Air Service lectured on model airplanes, illustrating the effect of the DeHaviland "wing-slot" and discussing the relative merits of the tractor and pusher types.

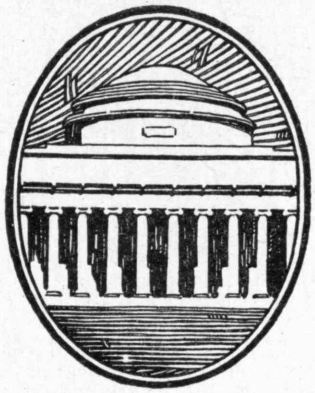
The report of the combined Hartford, Waterbury, and New Haven outing held at Old Lyme on June 29 has not yet been written up for The Review. — STUART M. BOYD '18, *Secretary*, 9 Highland Avenue, West Haven, Conn.

The Technology Club of New York

Now that the hot weather and the vacation season are over, the Club is again becoming the most popular meeting place for Technology men in New York. Our daily luncheons in our private grill are very popular, and the Club expects to start in October another series of special Thursday luncheons with speakers. These were very enthusiastically attended last year and we hope that all Technology men in the vicinity will make it a point to be at these luncheons.

Wednesday night is the official bridge night at the Club so that anyone desiring to drop in and play is assured of keen competition. Dr. Duff and his committee have planned a bridge tournament to start on Tuesday, October 15, for five weeks. These tournaments were very popular last year and we hope for an even larger tournament for the coming season.

The cowboy pool tournament was finally won by that eminent cattle man, George Holderness. Another round-up is scheduled for later in the season. — ALFRED T. GLASSETT '20, *Secretary*, The Fraternities Club, 22 East 38th Street, New York, N. Y.



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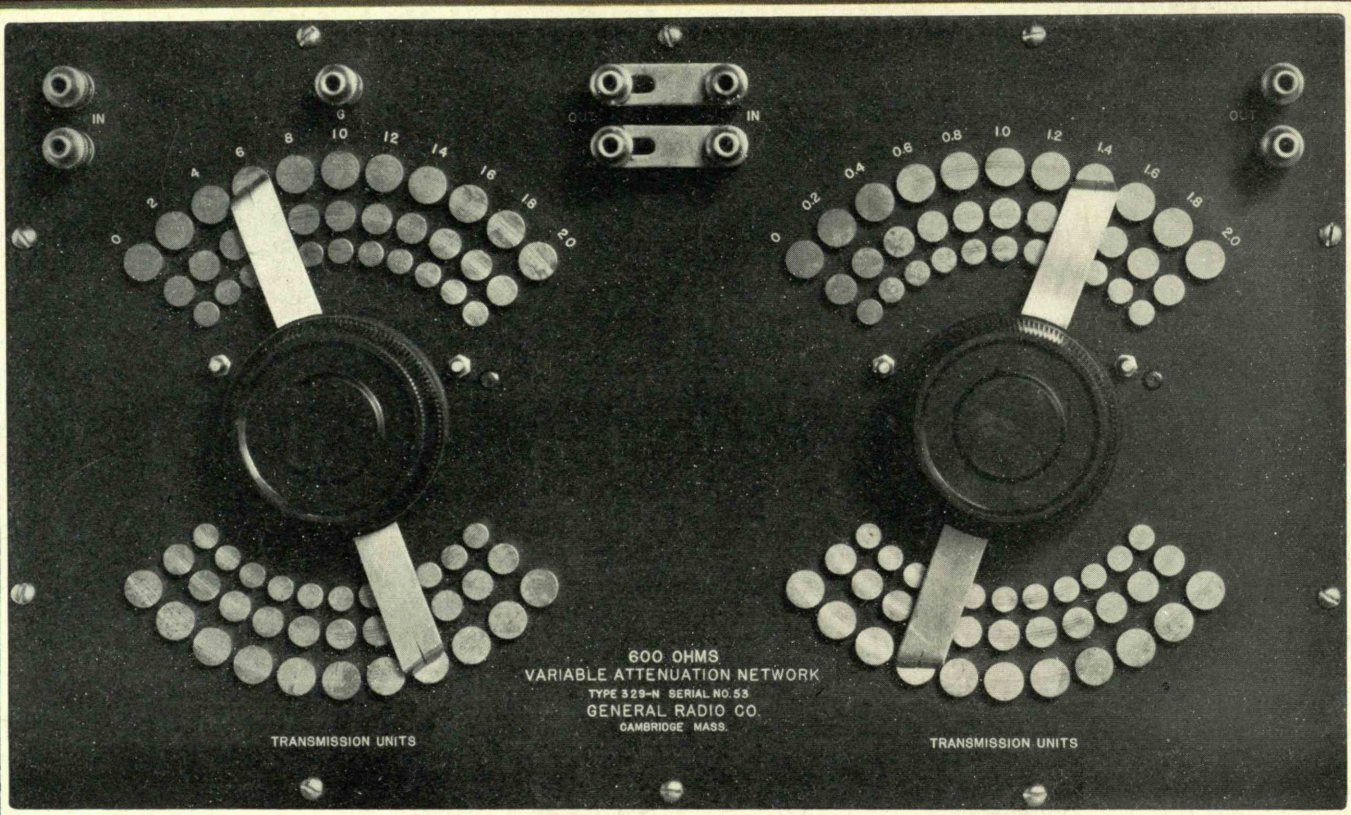

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